

THE CONNECTICUT SCHOOL JOURNAL.

NEW SERIES.

NEW HAVEN, CONN., JULY, 1872.

VOL. II.—NO. 7.

PUBLISHED UNDER THE DIRECTION OF THE
STATE TEACHERS' ASSOCIATION,
By CHARLES C. CHATFIELD & Co., 460 Chapel Street, opposite Yale College, New Haven, Ct.

MANAGING EDITORS:

I. N. CARLETON, New Britain. W. B. DWIGHT, New Britain.

BOARD OF EDITORS:

D. P. CORBIN, Hartford.	B. G. NORTHRUP, New Haven.
H. C. DAVIS, New Haven.	A. PARISH, New Haven.
J. D. FERGUSON, Stamford.	M. PITMAN, Durham.
A. G. FINNEY, Portland.	H. E. SAWYER, Middletown.
S. B. FROST, Danielsonville.	R. SPAULDING, Rockville.
A. MORSE, Hartford.	N. H. WHITTEMORE, Norwich.

Address all business letters to the publishers, New Haven, Conn.; all editorial letters to the editors at New Britain.

CONNECTICUT STATE NORMAL SCHOOL,

NEW BRITAIN, CONN.

This institution is now in successful operation, with a large number of pupils. Thorough instruction is here given, FIRST, in the branches of the study required to be taught in the public schools, and, SECOND, in the best methods of teaching those branches.

Applicants for admission must be at least sixteen years of age, must declare their full intention of teaching in the public schools of Connecticut, and must pass a satisfactory examination in Reading, Spelling, Writing, Arithmetic, Geography, and English Grammar.

Examination for admission is held on MONDAY, the first day of each term, at 2 o'clock, P.M.

The next school year opens August 26th, 1872.

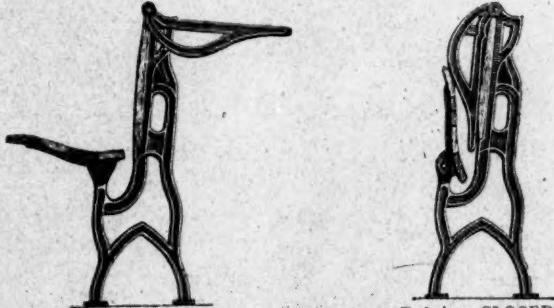
For catalogue, address, at New Britain;

I. N. CARLETON, Principal.

NATIONAL SCHOOL FURNITURE CO.,

111 and 113 William St., New York,

MANUFACTURERS OF



PEARD'S PATENT FOLDING DESK and SETTEE.

This Desk was awarded the prizes over all competitors at the fairs of the American Institute for 1870 and 1871.

When the desk-lid is folded over, it rests against the back of the seat in front, forming an equally comfortable false back. The book-rack is always accessible. The seat hinge is the latest patent, February, 1872, and the last in use. It is the strongest made, and perfectly noiseless.

Over 20,000 of these Desks have been sold since their first manufacture, July, 1861.

We also manufacture the "GEM" and "ECONOMIC" DESKS, with stationary top and folding seat; the "NATIONAL STUDY DESK" with Easel attachment for High Schools and Academies, and a full line of School, Church and Hall Settees, Black Boards, &c.

The same noiseless Hinge Joint is used on all our folding Desks and Seats.

Send for an Illustrated Catalogue. Address,

THE NATIONAL SCHOOL FURNITURE CO.,

Or 111 and 113 William St., New York.

E. G. FINNEY, Portland, Conn.

[72c]

*Pronounced by GENERAL EATON, Commissioner of Education at Washington, to be the best system in the United States.
"Children not taught like parrots to sing by rote, but taught to READ music and sing it AT SIGHT."*

JEPSON'S MUSIC READERS FOR PUBLIC SCHOOLS.

SIMPLE. PROGRESSIVE. TESTED FOR TEN YEARS.

The result of actual experience in the schoolroom.

Every teacher who has ever desired to instruct children in the elements of music has felt the need of a book that was simple, clear and progressive in its character—one that could be used successfully even if the teacher was scarcely proficient in the first rudiments of the science. Such is the Music Reader by Prof. Benjamin Jepson. As to the value of the system no higher commendation can be given than that awarded by Gen. Eaton, who, after visiting the schools of the United States, gave his unqualified endorsement of this system as the best he had seen.

THE TESTIMONY OF PROF. HUNTINGTON IN REGARD TO JEPSON'S MUSIC READER.

During a period of twenty-five years in which I have been engaged in teaching, much of the time in schools and seminaries, I have been unable to find a text-book or music manual which would not either confuse the pupils by introducing a multiplicity of ideas in the same exercise or promote *rote singing* by limiting the demonstration of each principle to a single exercise, until I found the system adopted in Prof. Jepson's book, which, in my opinion, must be the one universally accepted and fostered by the public schools of our land. The intrinsic value and merit of the book has been fully demonstrated in the schools of New Haven, where it has been used for the past six years by its author, and in those of Hartford and its vicinity by Prof. R. S. True. One very important feature of the work is that it can be readily understood by subordinate teachers even though not altogether familiar with the science; and with the same preparation for each recitation which is made in every other science, music may be as effectually taught, which is shown in all the public schools where it has been adopted.

Prof. Jepson is worthy of high esteem, not only as a thorough musician, but as a philanthropist, placing in the hands of the children and adults of our country a book which will enable them to successfully cope with the musical progress of the age.

C. W. HUNTINGTON, Hartford, Conn.

The following is the testimony from the principals of Middletown, where the system has been tested thoroughly:

I am familiar with Mr. B. Jepson's methods of instruction in singing as laid down in his "Elementary Music Reader," and as exemplified in his own practice. The "Reader," both in the earlier and later editions, has been used in our schools, and I am convinced that if the course there indicated be followed with tolerable energy and perseverance, the results will demonstrate the great value of the system and of the book.

H. E. SAWYER, Superintendent of Schools, Middletown, Ct.

I have been using "Jepson's Elementary Music Reader" for some months and am desirous of expressing my ever increasing satisfaction with it as a text book. Having been written by a gentleman who had a large experience in this hitherto neglected but very important branch of education, it exactly meets the want felt in all schools, public or private, where music as a study is being introduced. The explanations are so simple, and the exercises so easy, progressive and attractive that the book commends itself to all who use it—and teachers with only a moderate knowledge of music will be able, by its use, to teach thoroughly and practically.

A. L. CURRIS, Teacher of Vocal Music, South District Schools, Hartford, Conn.

We have tested Prof. Jepson's "Music Reader" in the various grades of our school, and find them most admirably adapted to their purpose.

D. P. CORNUE, Principal Asylum Hill Grammar School, Hartford, Conn.

Every exercise which is undertaken in the school-room should be executed honestly and thoroughly. I have always regarded the "Elementary Vocal Drill" as the exercises of all others the most reluctant to conform to this rule. In overcoming the difficulties of the exercise, I have received more help from Mr. Jepson's system of elementary vocal drill than from any other.

JOSEPH GILE, Principal of Eaton School, New Haven.

TESTIMONY OF HON. BIRDSEY G. NORTHROP, SECRETARY OF THE STATE BOARD OF EDUCATION OF CONNECTICUT.

Mr. Benj. Jepson, the instructor of Vocal Music in the public schools of New Haven, has shown great tact and skill in teaching singing by note to even the youngest pupils in the schools of the city. His system has been long and thoroughly tested in New Haven, where it is now working admirably. Gen. Eaton, National Commissioner of Education, and Gov. English, when visiting the schools of this city, expressed their surprise and gratification at hearing children in the primary schools sing *at sight* various exercises marked at the time on the blackboard. I should be glad to find the system which has here been so successful, generally adopted. Certainly, music should be taught in all our schools.

B. G. NORTHRUP,

Secretary State Board of Education.

FROM PROF. HIBBARD, THE ELOCUTIONIST.

Prof. Jepson's method of teaching singing, as arranged in his "Elementary Music Reader," is of a very superior order, and in our schools will do everything that can be reasonably expected of a work of the kind.

RALPH G. HIBBARD, Professor of Elocution.

the public schools of New Haven, Hartford and Mid-

Prof. Jepson's Music Reader is, in my opinion, the most systematic and best adapted to school use, of any work of its kind now before the public. I have certainly a high opinion respecting its merits, since first seeing it in manuscript—an opinion which its use in the school-room for several years has greatly strengthened. Prof. Jepson is deserving of the praise which his highly meritorious work receives, and we cheerfully add our testimony to the above.

RALPH H. PARK, Principal of Worcester School, New Haven.

"Jepson's Music Reader" has been used in the daily practice of vocal music in his school since its organization. The results have been, not only satisfactory, but wonderful. The system is such that children reading in the Primer or First Reader can learn to sing the scale, first by numeral, then by syllable, then simple melodies in different keys, and so on through the elements of music. The children in the Grammar Department are able to sing new music *at sight* in four parts. The time spent in the daily practice is from fifteen to twenty minutes.

H. C. DAVIS, Principal Skinner School, New Haven.

It gives me much pleasure to testify of the success attending the study of real music in our school under the superior management of Prof. Jepson. Mr. J. is thoroughly qualified for his work, and enters into it with a zeal that is highly commendable. Not being satisfied, however, with what he has already done, he has conceived the idea of revising his "Elementary Music Reader," making a complete and easy gradation of exercises adapted to the wants of the younger as well as the older pupils. Mr. Jepson has already established an enviable reputation in New Haven as a teacher of vocal music, and his revised work, so admirably adapted to school use, will no doubt meet with a large sale.

GEO. R. BURTON, Principal Wash. School, New Haven.

CHARLES C. CHATFIELD & Co., Publishers.

458 & 460 CHAPEL STREET,

OPPOSITE YALE COLLEGE,

NEW HAVEN, CONN.

CONTENTS OF NO. 7, VOL. II.

PAGE.		
MATHEMATICS IN HISTORY. No. 3. By Prof. R. Fletcher, Thayer School of Civ. Eng. -	187	
MORALS. By E. A. Hubbard, Superintendent of Schools, Springfield, Mass., -	189	
THE TEACHER. A poem. By Geo. S. Burleigh, -	190	
OBLIGATORY EDUCATION. By B. G. Northrop, Secretary Connecticut Board of Education, -	193	
YOUNG TEACHERS' DEPARTMENT:		
The Art of Teaching. By A. G. Boyden, Principal of the Bridgewater (Mass.) Normal School, -	199	
MISCELLANY:		
Light and Color in Natural Beauty, Translated from the German of Ch. Oeser; Technical Instruction in Italy; Art Education in Massachusetts; Rare Instruments at Stevens Institute; The Imperial College at Yedo, by William E. Griffis; Jottings in Yedo; The Insect Wax of China; Vegetable Soap, -	201	
EDITORIALS:		
Woodstock; Cheshire; Farmington, -	211	
BOOK NOTICES:		
The New American Pronouncing Speller; The United States Reader;		
Music and Morals; Word Book of English Spelling; The Fifth and Sixth Readers; First Lessons in Natural Philosophy for Beginners; Questions for Written Examinations; Pamphlets Received, -		212
FACETIES, -		216
The National Educational Association, -		216

INDEX TO ADVERTISEMENTS.

Connecticut State Normal School,	(Cover) i
National School Furniture Co.,	i
Jepson's Music Reader,	ii
Charles C. Chatfield & Co.,	ii
Thompson, Bigelow & Brown,	ii
Wilson, Hinkle & Co.,	ii
E. M. Thurston & Co.,	ii
Townsend Savings Bank,	ii
Ward's Ink,	ii
E. J. Piper,	ii
Ivison, Blakeman, Taylor & Co.,	ii
Sheldon & Co.,	ii

THE CONNECTICUT SCHOOL JOURNAL is published once a month. Subscription price, \$1.50 per year, in advance. Single copies, 15 cents. All letters except those in regard to matter to be published in the JOURNAL to be addressed to the publishers, CHARLES C. CHATFIELD & CO., NEW HAVEN, CONN. All contributions of every kind must pass under the notice of the editors, and should therefore be addressed to "Editors of CONNECTICUT SCHOOL JOURNAL, NEW BRITAIN, CONN." Be careful to make this distinction: The editors reside in New Britain; the JOURNAL is printed and published in New Haven.

M. E. THURSTON & Co.,
MANUFACTURERS OF
SUPERIOR SCHOOL FURNITURE,
DESKS AND SETTEES,
7 and 9 FULTON STREET, PROVIDENCE, R. I.



Also, Owners of the
ELASTIC SLATING,

Which is warranted equal, if not superior, to either the Boston or New York boards, in smoothness, color, durability, reflection of light, and, in fact, in all that can be claimed for a first-class Black-Board.

Best quality of SCHOOL SUPPLIES constantly on hand.

E. M. THURSTON & CO.,
7 and 9 Fulton Street, Providence, R. I.

TOWNSEND SAVINGS BANK,
CORNER OF CHAPEL AND ORANGE STREETS.

Deposits made in this Bank commence Interest on the Day of Deposit,—which interest is added to principal and Compounds in February and August of each year, all of which is free of all taxes.

Bank open from 9 A. M. to 3 P. M.

JAMES M. TOWNSEND, President.
LEVI IVES, M.D., Vice President.
EDWARD H. TOWNSEND, Sec'y.

[65a]

SCHOOL FURNITURE.

Send for
ILLUSTRATED CATALOGUE

TO

E. J. PIPER, Manufacturer,

[48a] Springfield, Mass.

USE WARD'S INK

SAMUEL WARD & Co.,

PROPRIETORS, BOSTON, MASS.

CHARLES C. CHATFIELD & Co.,

GENERAL DEALERS,

COLLEGE BOOK STORE,

NEW HAVEN, CONN.

[67f]

**To Teachers about to Purchase Books,
either New or Second-Hand.**—We beg to announce to the teachers of Connecticut that we keep a full stock of new and also second-hand School Books, as well as all kinds of new and second-hand Miscellaneous Books, which we sell at extremely low prices. Customers served as well by mail as though a visit was made in person. A full stock of teachers' supplies always on hand. Special discount to teachers.

CHARLES C. CHATFIELD & Co.,

Nos. 458 and 460 Chapel Street,

(Opposite Yale College),

New Haven, Conn.

New School Books ADDED TO The American Educational Series.

Swinton's Primary History.

FIRST LESSONS IN OUR COUNTRY'S HISTORY, bringing out its salient points, and aiming to combine simplicity with sense. By WM. SWINTON, A.M., Prof. History in the Univ. Cal., Author *Condensed Hist. U. S.*, etc. 1 vol. Square. Fully illustrated. Price 80 cents.

This is the most dainty and attractive School book ever issued from the press. The distinctive place which it is designed to occupy is the lower classes of our graded, ungraded, and private schools. It is fully illustrated with full and attractive designs drawn and engraved by the most famous artists. In this respect, it is unapproached by any school book ever published.

The chief features that will recommend the "First Lessons" are:

1. Its plain yet picturesque style, and the skill with which "simplicity and sense" are combined in the treatment.
2. The care in the historical perspective, by which only the "salient points" are brought out, and these with such fulness as to produce distinct and lasting impressions.
3. The convenient arrangement of easy yet suggestive questions in the margin, giving plain and ready reference to both teacher and pupil.
4. The clustering of events round the great central facts of our history, thus aiding the memory by the power of association.
5. The method of plain review lessons to reiterate the leading events, and secure their remembrance.
6. The beauty of mechanical execution as regards print, paper and illustrations.

Single Copies, if desired for examination, with a view to introduction, will be forwarded by mail, on receipt of 50 cents.

An Elementary Grammar of the Greek Language,

WITH EXERCISES AND VOCABULARIES, by the late SAMUEL H. TAYLOR, LL.D. Based on the 25th edition of KUHNER'S *Greek Grammar*. Cloth. 400 pages. Price, \$1.60.

This volume was begun and carried considerably forward by the late Dr. SAMUEL H. TAYLOR, of Andover, Mass., and was completed by his son, GEO. H. TAYLOR. The work has been done with great care and much practical skill, and has been completed as nearly as possible according to the plan of Dr. TAYLOR. KUHNER, as a basis, has been strictly adhered to, though no addition or change has been overlooked, which long experience in teaching has suggested.

As regards mechanical execution, the text is a fine specimen of art carried into typography. We may instance, in illustration, the readiness with which, at a glance, the eye takes in the relative place and importance of the several subject-matters, by skill in the headings, and the valuable manner in which stems and inflections are imprinted on the memory, through the use of antique type. The typography, in fact, combines an educational use with artistic beauty.

Single Copies, if desired for examination, with a view to introduction, will be forwarded by mail, on receipt of \$1.25.

An Elementary Manual of Chemistry.

FOR COMMON SCHOOLS, ACADEMIES, NORMAL SCHOOLS, etc.; abridged from ELLIOT AND STOREY'S *Manual of Inorganic Chemistry*, with the co-operation of the authors, by WM. RIPLEY NICHOLS. Fully illustrated with diagrams and other engravings. 300 pages. Price \$1.50.

This is not simply an abridgement; it is a shorter, easier, and yet more comprehensive work than ELLIOT AND STOREY'S *Manual*. That volume covers only Inorganic Chemistry, while the Abridgement includes what is usually called Organic Chemistry. Great care has been given to adapting the present work to the wants of our Common Schools, Normal Schools, and, in fact, to the wants of all classes requiring a fresh, complete, and practical elementary text-book on Chemistry. It is up with the times in its scientific accuracy, nomenclature, etc., and will not fail to give the fullest satisfaction to those who are in want of such a book. The diagrams and other illustrations are very numerous, and add much to its beauty and utility.

Single Copies will be sent by mail, if desired for examination, with a view to introduction, on receipt of \$1.00.

 The EDUCATIONAL REPORTER for May is now ready, and will be sent to Teachers and Educationists gratis on application.

IVISON, BLAKEMAN, TAYLOR & Co.,
PUBLISHERS,

5a 138 and 140 Grand Street, New York.

COLTON'S

NEW SERIES OF

GEOGRAPHIES.

The Whole Subject Embraced in

TWO BOOKS.

Two complete Rail Road Maps, and 10 full reference Maps are now being added to these books.

The distinguishing features of these Books are:

- 1st. They contain all which the scholar should be required to learn, and nothing more, stated in the clearest possible form.
- 2d. The clearness and beauty of the Maps.
- 3d. The whole subject of Geography as taught in Common Schools, is embraced in Two Books—

No. 1.

Colton's New Introductory Geography.

Elegantly Illustrated with entirely new Maps, drawn expressly for this book. Price 90 cts.

No. 2.

Colton's Common School Geography.

Elegantly Illustrated by numerous Engravings and Twenty-two Maps drawn expressly for this Book. Price \$1.75.

A GREAT SAVING IN TIME AND MONEY

IS THUS EFFECTED.

We ask for these new books a comparison with the best series yet published.

Send for Complete School Catalogue.

Address,

SHELDON & CO.,

PUBLISHERS,

677 Broadway,
[64c]

NEW YORK.

THE CONNECTICUT SCHOOL JOURNAL.

NEW SERIES.

NEW HAVEN, CONN., JULY, 1872.

VOL. II.—NO. 7.

MATHEMATICS IN HISTORY.—No. 3.

A. D. 600 TO 1300.

BY PROF. R. FLETCHER, THAYER SCHOOL OF CIV. ENG.

At Alexandria had been collected, during many centuries, several hundred thousand volumes containing the science and literature of the nations of antiquity. Here had assembled cultivators of the arts and sciences from all nations. But in the beginning of the 7th century, the Saracen conquerors overwhelmed the Eastern countries like an inundation. Alexandria fell into their hands A. D. 640. "The places and instruments which had been so useful in making an immense number of astronomical observations were involved with the records in one common ruin. The whole of that valuable library which contained the works of so many eminent authors, and was the common depository of every species of human knowledge, was entirely devoted to the flames by the Arabs." The Alexandrine School was forever broken up and its supporters were dispersed throughout the world. Apparently science and literature were buried and barbarism and ignorance were to reign triumphant. But a good result followed, viz: the scattering of scholars among the nations. Alexandrine philosophers carried with them a remnant of that general learning for which their school was so deservedly celebrated. "However, destitute of books, of instruments, and probably also of the means of existence without manual labor, very little farther knowledge could be accumulated, and still less propagated; so that in a few years every species of knowledge connected with philosophy and mathematics must have become extinct, had not the Arabians themselves, within less than two centuries of this fatal conflagration, become the admirers and supporters of those very sciences which they had before so nearly annihilated. They studied the works of the Greeks with the greatest assiduity, and, if they added little to the stock of knowledge which these works contained, they became sufficient masters of many of the subjects to enable them to comment upon them, and to set a due estimation upon these

valuable relics of ancient science."* Thus these people transmitted that knowledge to our time.

From the 6th to the 14th centuries the political conditions of Europe were such that scientific learning met with as little favor as during the first six centuries. But, while intellectual darkness brooded there, the Arabs became the guardians and promoters of geometry as well as the other sciences. Of this Bossut writes as follows: "The Christians in general for a long time displayed a great aversion to the sciences. Subjected, from the origin of Christianity, to a multitude of superstitious opinions which tended to convert man into a contemplative automaton, they looked with indifference or disdain on all occupations foreign to religious worship, or to the labors absolutely necessary to procure them subsistence. However, when they had begun to drive the Arabs out of some parts of Spain, in the beginning of the 10th century, the voluntary or compulsory intercourse which they had with these people excited the electric fire of genius among the Christians, and many of them were eager to acquire knowledge from those Moors whose religion they held in abhorrence." Naturally then we are now led to trace the history of the mathematics to the time of the revival of science in Europe at the beginning of the 14th century.

We have learned in what obscurity the origin of Arithmetic is involved, and it will not be out of place, in resuming its history, to take a retrospective glance at some of the traditions concerning it. Plato believed that both arithmetic and astronomy had their origin among the Egyptians. Strabo relates that these branches were first cultivated by the Phoenicians, to whom, as a maritime and trading nation, they were indispensable. Josephus asserts that the Egyptians were indebted for their knowledge of both sciences to Abraham, who was a Chaldean. Hence these authorities and, in fact, the whole weight of available testimony lead logically to the conclusion we formed at first, viz., that arithmetic in all probability and astronomy unquestionably, were first developed in Chaldea.

In order properly to appreciate the inestimable

* Barlow.

value of the Arabic system of notation (which, as we have learned, probably originated in India) the reader should become familiar with some of the systems of literal notation used by the ancients. But a volume would be necessary to elucidate the subject in its details. In Barlow's Mathematical and Philosophical Dictionary, under "Arithmetic," is a very interesting sketch of the Grecian system, which may serve as a type of all the ancient methods. Our limits will permit us here to illustrate only by two examples. The first is in multiplication. They operated from left to right as we do in algebra, placing successive products without apparent method; each character retained its proper value, whatever its position, which made the addition somewhat troublesome.

$\rho \ r \ \rho$	$\rho = 100$
$\rho \ r \ \rho$	$r = 50$
$\alpha \ \beta \ \tau$	$\tau = 3$
$\beta \ \beta \ \eta \ \theta$	$\alpha = 10,000$ Greek myriad.
$\tau \ \eta \ \theta$	$\beta = 5,000$
	$\tau = 300$
	$\beta \ \eta = 2,500$
$\beta.$	
$\gamma.$	
$r.$	

Interpretation by Arabic Notation.

$$\begin{array}{r}
 100+50+3 \\
 100+50+3 \\
 \hline
 10,000+5,000+300 \\
 5,000+2,500+150 \\
 300+150+9 \\
 \hline
 20,000+3,000+400+9=23,409
 \end{array}$$

The lack of simplicity in the system made the process in the Grecian mind a long one. "The division of the Greeks was still more intricate than their multiplication, for which reason it seems they generally preferred the sexagesimal division, and no example is left at length by any of those writers, except in the latter form; but these are sufficient to throw some light on the process they followed in the division of common numbers, and Delambre has accordingly supposed the following example:"

$\tau \lambda \beta. \gamma \times \theta (\alpha \omega \times \gamma)$	$\tau \lambda \beta = 332 \times 10,000$
$\rho \pi \beta. \gamma$	$\gamma = 3,000$
\hline	$\tau = 300$
$\eta \tau \times \theta$	$x = 20$
$\theta \mu \epsilon. \eta \nu$	$\theta = 9$
\hline	
$\zeta. \alpha \pi \times \theta$	$\rho \pi \beta = 182 \times 10,000$
$\gamma. \sigma \pi \times \xi$	$\rho \mu \epsilon = 145 \times 10,000$
\hline	$\zeta = 6,000; \epsilon = 40,000$
$\beta \nu \xi \theta$	$v = 400; \xi = 60$
$\beta \nu \xi \theta$	$\pi = 900$

Interpreted by Arabic Notation.

$$\begin{array}{r}
 332(10,000)+3,000+300+20+9 (11,000+800+20+3 \\
 182(10,000)+3000 \\
 \hline
 150(10,000)+\ 0 +300+20+9 \ 1,000+800+20+3 \\
 145(10,000)+8,000+400 \\
 \hline
 40,000+1,000+900+20+9 \\
 30,000+6,000+400+60 \\
 5,000+400+60+9 \\
 5,000+400+60+9
 \end{array}$$

Modern Operation.

$$\begin{array}{r}
 1823) 3323329 (1823 \\
 1823 \\
 \hline
 15003 \\
 14584 \\
 \hline
 4192 \\
 3646 \\
 \hline
 5469 \\
 5469
 \end{array}$$

"This example will be found, on slight inspection, to resemble our compound division, or that sort of division that we must necessarily employ, if we were to divide feet, inches, and parts of similar denominations; which together with the number of different characters that they made use of, must have rendered this rule extremely laborious: and that for the extraction of square root was of course equally difficult, the principle of which was the same as ours, except in the difference of the notation; though it appears that they frequently, instead of making use of the rule, found the root by successive trials, and then squared it in order to prove the truth of their assumption. From the foregoing sketch of the notation and arithmetic of the Greeks, the reader will be able to form some estimate of the value and importance of the present system, which does perhaps as much honor to its inventor as any other discovery in the whole circle of the sciences; being that to which we must consider ourselves indebted for the many brilliant advances that have subsequently been made in the modern analysis and astronomy."

The Arabians did little more than translate and study the works of the Grecian writers on the mathematical sciences. Neither arithmetic, geometry proper, or any of its allied branches made any striking advances during the period we are considering. *It is worthy of mention that "The oldest European author of arithmetic is Jordanus of Namur, who flourished about 1200 and whose arithmetic was

published and demonstrated by Joannes Faber Stapulensis in the 15th century, soon after the invention of printing. The same author also wrote a work upon the new art of computation by the Arabic figures called 'Algorismus Demonstratus.'

About this time a new branch of mathematics, is, in the order of events, brought to our notice. It is now called *Algebra* and is defined by Davies as that branch of mathematics of which the object is to investigate the relations and properties of numbers by means of symbols. Being a science of a general and abstract nature it naturally would not take shape until the human mind had reached an advanced state of development. We have no means of knowing either the date or the author of this invention; but it probably arose, by slow and imperceptible degrees, during many ages. Even with all the writings of the ancients before us we probably could not determine any exact date when the algebraic art began. The analytical method of investigation must have early suggested itself to mathematicians. In fact we find traces of it in many ancient authors.

The etymology of the word *Algebra* is given in various ways. It is almost certain, however, that the word is Arabic. Some authors hold that it is derived from the Arabic expression *Alghebra e al-mucabel*, which means *restitution* and *comparison* or *resolution* and *equation*; others that it is from *Geber*, the name of a celebrated mathematician; others still that it is from the Arabic words *al* and *geber*, signifying *reduction of broken numbers or fractions to integers*.

The Arabians produced many original and profound writers on this subject. They either ascribe the inventions of the art to their own nation or hold that they first received it from the Persians and Indians. Certainly the Arabians cannot be considered as the inventors, for they doubtless derived their ideas from the works of Diophantus (A. D. 350) and other Greek authors. They however greatly improved it and, perhaps, brought it into shape as a science. Diophantus of Alexandria is the first ancient writer who has left us any treatise on the analytic art. It appears that he understood operations relating to simple equations and the powers of quantities. His works consist mainly, however, of collections of difficult questions relating to square and cube numbers, with their solutions. "Both the name and the science were transmitted to Europe, and particularly to Spain, by the Arabians or Saracens, about the year 1100, or probably a little earlier."

MORALS.

BY E. A. HUBBARD, SUPERINTENDENT OF SCHOOLS,
SPRINGFIELD, MASS.

It is sometimes said that the teacher's province does not include morals, that the teaching of morality belongs to the parent and to the pastor. But if the parent does not do this work, and the child has no pastor, what then? Shall he have no moral training and go out from our schools wholly unfit for society? He comes into our hands, before his habits are all formed, before his sensibilities are all deadened, and his mind is in a forming state. Home influences are so different and natural dispositions so unlike, that we do not find all equally susceptible to moral impressions. But the very ones who are most impressible and whose training is easiest, are those best cared for at home and least in need of our help, while another large class are entirely dependent upon us. Nor does it relieve us to say that the parent ought to give this training. He does not, and therefore we must. We know that if we neglect this work for the child, that if we do not set him in the right direction, he will not merely be left to float upon the current with an even chance that he will go right, but he will be turned in a wrong direction and be well nigh compelled to go wrong. In a short time he will leave our schools and launch his frail craft for the voyage of life. It is not enough that we give him a chart with the course all marked out, that the currents, the rocks and the shoals are all laid down in it, that we teach him the use of the compass and show him the pole star, that we teach him how to guide the ship in the storm, and to find his bearings and his place when the clouds have passed away. All this we should do if we wished to make him a pirate. We must place conscience and right reason at the helm, and then will our voyage be successful.

Nor may we say that in a few years the boy will pass out from our influence, that he will be promoted to another school, or that in the vacation he will forget the good we have taught him, and learn much evil. This may be true, but it does not free us from obligation. Buds and leaves and blossoms have had a cold hand laid upon them these wintry months, but the sunny days of approaching Spring shall swell those buds, shall bring out those green leaves, and strew the earth with flowers. No one of those coming days says, "I am only twenty-four hours long and half of those are dark; all that I can

do in the day will be undone in the night; I don't know at all what sort of a day to-morrow will be, and really the little that I can do will amount to nothing," but each day does its appropriate work, and the result will gladden all hearts next June. Let us then go forth to our work in faith and hope, knowing that no sincere effort to do good is ever lost.

THE TEACHER.

A POEM,

First read at the Anniversary of the Connecticut State Normal School, New Britain, July 11, 1867.

BY GEO. S. BURLEIGH.

To you, this day my votive verse I frame,
Who wear with worth the Teacher's noble name,—
Lamp of the mind to simple and to sage,
Youth's curious eye and tongue of ripened age,
The poor man's banker and the rich man's friend,
And strength of arms that conquer and defend.
Your glorious mission, measure it who can !
It fills the broad circumference of man,
Invades the glooms where eldest shadows brood,
And sweeps the dizzy verge of Angelhood ;
Allures the baby with a fitting gift
And feeds the greybeard from your boundless thrift ;
To every age pronouncing Wisdom's plea,
It brings an echo from eternity !

Armed with the weapons time and toil have wrought,
Annealed in centuries of consuming thought,
The slow results of daring search and guess,
Didactic failure and divine success,—
The Teacher leaves the world's gray dawn behind,
And boldly sounds the forward march of mind.
Not now to dwell in ruins of the old,
He rakes their ashes and disturbs their mould,
Reads arrowy signs from Nimrod's temple aisle,
Unwraps the long-tanned mummies of the Nile,
Tracks through Pompeii's palace hall and street
The car's stone groove and tread of sandalled feet ;
For better homes the bright green present yields,
Made sweet with incense of our clover fields ;
And nobler temples and diviner shrines
Gleam where our sun on spire and bell-tower shines.
But from the Past he wrings reluctant lore,
To light the paths that open far before ;
Beacons the rocks with phosphorescent fire,
From bones of crumbled empires, from the mire
Of rank Campagnas feeds the glowing throat
Of engines almost wise enough to vote ;
And like the Vestal Nature when she burns
In tulip flames and lily's fragrant urns,
The grey dead things of winter, his clear brain
Consumes old husks to cherish the new grain.
"Stand and deliver" is the hail he gives
To all that was or is, that lived or lives ;
Nubia and Luxor, from their giant mass,
May yield one atom for his chemic glass,
One vital fact from all their dusty lees—
The mummy wheat of thirty centuries,—
That in his garden into new life fed,
May grow to feed the hungry soul with bread.

Old Greece will give him, what all time will guard,
The tragic muse and Scio's sightless Bard ;
Rome lend a sparkle of heroic fire,
With silvery music of her Mantuan lyre.

All the dead nations from their funeral urn
Shall teach the lesson that they would not learn,
That men are brothers, and they build to fall
In hopeless ruin who build not for all ;
That life is progress, and her true souls march
Abreast with Time through his triumphal arch,
And realms that falsely move, or idly wait,
Are ground to powder by an iron fate.

With pick and hammer, and an eye that knows
Life's lightest foot-print in the rock, he goes
Into a past that makes the long array
Of buried realms the infants of to-day,
Among gigantic bones in ruin hurled,
The wallowing monsters of a seething world,
Primeval pines and plumes of palmy fern,—
The old flames fixed that loosened still will burn ;
The long procession of ascending lives
From starry forms that multiply their fives,
Through jointed rings, through shells aglow with hints
Of life's great sunrise in their roseate tints,
To the last form, predicted from the first,
That stands erect, the flower of soul full burst,—
Finding the same great lesson, God in all,
And life for ever onward ! To his call
The recluse Darkness renders up her keys,
And tongueless Death his rock-bound mysteries.
Then when the past, condensed in one quick word,
Has lent what fire its bounding pulses stirred,
He waves it back into its silent grave,
Rich with the worth or warning which it gave,
And makes the living Present the free heir
• Of all his wealth, unumbered with its care.

From theme to theme, as his high march proceeds,
Into what realms his noble calling leads ;
No field too poor to give some hidden charm,
And none too far for his extended arm.
A vital meaning, unexhausted yet,
Lives in the symbols of his alphabet,
The very syllables conceal old thought
Like ancient fossils to new figures wrought.
Words are historic, and a lingering noun
Tells where a nation, or a god went down ;
A root strikes backward to remotest years,
And infant Cain's first "Papa" greets our ears
From the last "Ba-by." In our parts of speech
Souls of old masters, clinging, breathe and teach,
And nature, faithful as to grass and tree,
Feeds all our tongues to live and grow as we.

What others know not, and who scarcely yearn
To know, the patient teacher toils to learn,
Most diligent of his pupils, in whose mind
Must lie, well marked and numbered where to find,
All shreds of knowledge, all odd ends of lore.
More vast and various than the village store ;
Where whoso calls for whatsoever fact,
It comes down straightway from its shelf unpacked ;—
How bees make honey, and where rain is born ;
Who killed Tecumseh ; who invented corn ;
Why clouds and wind prevent the falling dew ;
What greens the grass, what makes the clear sky blue ;
When earth turns over what forbids to drop
The tongs and poker from his chimney-top ;

Why red is red, and by what swift machine
Its sanguine wavelets could be split to green ;
What the sun weighs, and why the old cat's hair
Flashes and crackles in the wint'ry air !
Wherefore in adding carry one for ten,
And whence came first the thought of Soul to men.

When with his solvents, and the alembic's glow,
The teacher racks all elements below—
Like some dark wizard in the moon's eclipse,
To wring their secret from the panting lips
Fading to dissolution, what a smile
Of triumph flits across his own the while ;
For he has touched the chord of kindred there,
Which binds wood, wave, and rock, and the impalpable air !
And with how grand a flight he leaps the bar
Of earth, and soars to planet, sun, and star ;
Measuring their girth and sounding the great deep
With his sure plummet, far as light can sweep.
Now with his slender prism, a crystal key
Turned in the wards of far Immensity
Whose doors fly open at his touch, he tells
What lava floods Cor-Hydra's fiery wells,
And what tried metal, flashing through the sky,
Forms the red sword on vast Orion's thigh !
Not wildest fancy could such records ope
As he reads coolly from his Spectroscope ;
Or now that wizard glass that lifts the pall
From teeming atoms and the world of small,
Reveals the boundless sympathies that run
From the least monad to the farthest sun.
How great, how noble is the Teacher's task,
Lavish of all that eager minds can ask,
And prompt to kindle longings where the spark
Of first young wonder slumbers in the dark.
Like an Archangel awful Duty stands
To guide the motion of his guiding hands,
For all the future takes a fateful cast
From this potential heir of all the past !

Young souls around me, eager, fair and strong,
Joint heirs with him I glorify in song,—
Minerva's priest for this hour, standing here,
I speed you onward to your great career,
Touching your foreheads with the anointing oil
For that grand fellowship of glorious toil !
In all the petty cares that throng the way,
The thousand crosses and the crown's delay,
Walk nobly, calmly, with a courage nurs'd
On that long patience that can tire the worst,
Nor ever lose, though all the world forget,
The sense of your high calling, and the debt
Ye owe the future ; while on either hand
Duty and Honor, guardian Angels stand,
Let wisdom teach, Love rule, and Fancy cheer
The flocks ye lead by waters cool and clear !

O, country teachers, on your mission bound,
Grimly content to labor and board round,
To warm the spare beds gathering damps and fleas
Since last year's "school marm" packed her thin valise !
My mind, clairvoyant, follows as you go
To each warm vale, or hill of whirling snow,
Where the white school-house, with its bell-call clear,
Stirs like a harp the tingling atmosphere,
And the fair benches in a rising line
Invite the pupil to aspire and shine.
While some I see invade the sunny South,
With inkhorn mightier than the cannon's mouth,

Solving the riddle of our wise and great,
By Greene and Greenleaf, syntax and the slate ;
Laying for reconstruction's bottom bricks
Your Spellers, Readers, and Arithmetics ;

Others, half-lost in woods, or perched on high
To catch the favors of our Eastern sky,
Teeth chattering, hold their rural empire firm,
Freezing and broiling through a winter's term,
Where some gray hovel crowns a gusty bank,
By hungry jack-knives gnawed in every plank,
Where little boys, with vainly dangling feet,
Cling to the hard pine by their trowsers' seat ♦
Great shambling lads hawed in and gee'd away
Scrape iron-shod the floors where north winds play,
And blameless girls, close-cramp'd in penance-racks,
Drive shoulder-blades through faded Merrimacs !

But here and there, unconscious of their fate,
Sit all the guardians of the coming State ;
Some little Johnson, "swinging round" even now,
Here spoils the breeches he should learn to sew ;
Some sober Seward, on vague fancies bound,
Wants all the north-pole for his coasting-ground ;
There in the snow-breath the young Ellsworths pant,
Here grimly tugs in smoke a sturdy Grant ;
And yonder, grappling with some root obscure,
The new Ben Butler digs in miniature !

That little girl whose sweet and timid face
Blooms at your glance, shy nymph of every grace,
I hear her called high priestess of high Art,
Keeping all white her pure and simple heart ;
While this, with spicy wits and zeal elate,
Shall sit in Congress for the Nutmeg State !
That moon-faced lad whose eye forever smiles,
Whose freckles map the Polynesian isles,
Under that shocking shock of sandy hair
Hides what will make the Twentieth Century stare,
A Sky-Propeller and Heaven-Navigator,—
Through in six hours, from here to the Equator ;
This morning leaving at a moderate jog,
To-morrow flashing through a London fog ;
Before the sun twice shifts the earth's black robe
He'll whistle Yankee-Doodle round the globe !

There sits a lad, a little prone to laugh,
Whose head contains the Planet Telegraph,
With "News from Neptune" by "The Morning Wink;"
And "Last Advices from Creation's Brink!"
Little suspecting any thing so odd,
As sily now he shies a paper-wad
Full on the nose of yonder wiry chap,
The future President of — all the map !

As lambs at sucking, work their inner pump,
By its long handle, (sheep have but the stump,)
With vigorous waggle, and with many a bump,
So yonder boy, topped out with shades of red,
Waggles his knees and bobs his russet head
To draw out knowledge, from its fount that runs
A little dry for Wisdom's younger sons.

Here one whose mental habit is to see,
Buzzy for "busy," thinking of the "bee,"
Proclaims his work by one incessant hum,
That makes you wish him idler, or more dumb ;
But this you'll notice, when and where he goes,
He'll let the gaping world know all he knows !

There, "Lazy Lawrence," spite of bulk and strength,

Along the bench lops, slouching at full length,
Waiting till learning ventures within shot !
As if such shy game balked a chase too hot.
He'll keep a tavern or "saloon" half-sunk ;
Smoke, yawn and gossip, and die rich—or drunk !
But sturdy Jack, mouth open, arms a-crook,
On clutching fingers leaning, seems to look
Straight down the hole where learning skulks, to doubt,
Eager and resolute to dig her out !
He may be poor through all this earthly strife,
Yet shall the world grow richer for his life.

Yonder, I see, with lip fallen idly down,
His only study of the sort called "brown,"
The youth predestined to give looks the lie
In paths undreamed in our philosophy.
His mind is absent, like the busy dame
Whose "*Not at Home*," means "quite so—be the same!"
Down from the parlor to some dusky bin,
His soul has gone, and drawn the latch-string in ;
When it comes back, some sudden light, inwrought,
Will show what fine intoxicating thought
He drew from that dim cloister of his skull,
Where the mind busy, left the face so dull ;
It may be some grand Poem, clothed in verse,
Or deeds that make their glory who rehearse ;
Or, he may speak, almost beyond his will,
Words that create wide realms of good or ill ;
Good as the thought is noble, ye inspire,
Ill, as it takes from you unhallowed fire.

Called into line like soldiers on parade
In one full class is every mood displayed.
Here, bolt upright the Miss who will not miss
Stands like a statue of Semiramis ;
And there a long-sparred craft, not balanced well,
Rocks fore and aft as in a heavy swell ;
Good sooth, he *has* just weathered a frightful spell ;
Behind him one with gravity like a goose,
All on one leg,—the other lying loose,—
On the left instep twirls the dexter toe,
Boring for wit it might be, by the show.
Another leans upon a bench, and tries
To piece his brain's defection by his eyes,
Catching the catch-word from an open book :
If he find fame 'twill be by *hook* or *crook* !

There in a row—two girls upon one stalk,
Like a pink border in a garden-walk,
The benches bloom with lasses who make bloom
The sober brownness of the little room.
And you who tread that platform's narrow neck
Like a bluff skipper on his quarter deck,
You, the grave teacher, do you quite discern
How more than all you teach is *there* to learn ?
What tremors of quick nerves you need to soothe,
To win harmonious numbers clear and smooth ?
How that instinctive brain its thought lets fly
Like a swift falcon quarrying in the sky ;
And this grave matron in a pin-afore,
Leads Fact and fancy through the same straight door ?
How one cramp heart wants love, as flowers the sun,
To teach its vagrant tendrils where to run,
One heavy brain with sluggish blood replete,
Wants patient care to guide its tortoise feet ;
And one, too lavish of its vital stir,
Needs the firm check where others need the spur.

Wise must you be in more than books contain,

To catch the key-note of each varied brain,
And hold these wits in harness lax or stiff,
As plods the hack or soars the hypogriff.
"Pleasant the task to rear the tender mind !"
The soul possessed in patience so may find !
"To teach the young idea how to *shoot*,"
Though his first shots may strike too near, to suit ;
In that old *regime* well nigh dead and gone,
"Just as the twig was bent,"—they *laid it on* !
Supposing knowledge, needing larger doors,
Would come the reader through the loosened pores,
To give our jaws more vigor for their job,
They brought their mental "feed" upon the cob,
And when some heads refused the precious grist,
As if too full for more, by dint of fist
They knocked its ears to shake the measure down,
And quenched incipient brightness with a frown.

My memory wanders to the old brick pile,
Where austere Science never deigned to smile,
Where through the frozen moons the sturdy swain,
Who ruled stout oxen on the summer plain,
Unskilled to peddle, uninspired to preach,
Swung the vindictive birch and claimed to teach !
There rank by rank the verbal victor took
His conquering march through Webster's Spelling Book,
From a-b ab, to where in awful length,
"Om-pom-pa-noo-suck" tried his growing strength !

With what a pride he made his bold advance
On all the dead, unburied consonants
Of "phthisic," "bdellium," and the long array
Of words spelled right in just the *wrongest* way ;
While feebler souls with heads and tongues too thick,
Stumbled o'er mutes, and let the long l's stick
Like herring-bones, close packed in hopeless jam,
In jaws tripped up on "parallelogram" !
Murray and maple, grave Daboll and birch !
With charms whose difference baffled our poor search,
Alike their grim asperities displayed,
While knowledge fled as flies a timid maid,
When wits were staggered by the Rule of Three,
The "maple rule" cleared up the mystery :
If passive verbs hung fire in some dull brain,
Birch said "to suffer," by the sense of pain.

I see once more, and shudder as I look,
The fearful records of my copy-book,
Where hieroglyphs ran, crazed with dread or drink,
Like tracks of rescued spiders drowned in ink ;
And "Mend you may," drawn black in frightful signs,
Where hopeless mockery could you read the lines !
For "Masters" better skilled to swing a goad
Than a grey goose-quill, kept the old farm-road,
Steered pens like oxen, with a well-worn switch,
And scored all errors where they first could reach.

But they are gone and other days are come,
One short step nearer earth's millennium,
An age that honors brain, and growing bold
Shall esteem wisdom rather than fine gold ;
While Knowledge soars with broadening wing sublime,
Where the brute hoofs of Power could never climb.

"Tis yours to lead the new age on its course
By warm allurements, not by chilling force,
To be the vanguard of that better day
When man shall yield to love's diviner sway ;
Yours to unfold by warmth and light, the young,
And charge with meaning every prattling tongue ;

To teach the eye in simple things to find
The first tuitions of the growing mind ;
Some quickened sense of seeing to impart
From all fair forms of Nature and of Art,
And slowly up, by sweet attractions brought,
Guide the clear-drawn perception into thought.
Ye build for all the future, each alone
On some low wall or column of his own,
Yet so shall build, if worthily are laid
The firm foundations of your fair arcade,
That all the tower, from base to coping stone,
Shall rise harmonious, moulded into one !

Learn independence, and divine self-rule,
And teaching learn in Nature's Normal School.
Our God has given this mighty continent,
Grand with its rivers and the broad extent
Of rolling plain, deep mine, and mountain peak,
And cataracts that to the Ocean speak
In Ocean's dialect,—to make our own
The native compass of her breadth and tone ;
That we who breathe her boundless tides of air,
May catch the soul of greatness hovering there !
Nor more repeat the old world's shibboleth
At humble distance, and with bated breath.

Let us teach men to think, and work, and pray,
Not by old rules but in our own grand way !
Make to ourselves a language and a law,
Shaped to a grandeur Europe never saw.
Go, ask Niagara for its gift of speech,
Let the vast prairie, and the river, teach :
Rise to the style of Nature, and create,
Broad as the landscape, Temple, School, and State.

Let serfs and vassals wear the menial sign
And bow to "masters" with their rights divine ;
The boy who waits the appointed year that brings
A franchise prouder than the rights of Kings,
Shall bear the stamp of noble self-respect,
The crown of Nature on his brow erect,
And being birth-right sovereign, all who claim
The same great Father shall have rights the same.
When from our hills and lakes your schools have caught
The broad high strain of democratic thought,
The State shall be last grade of one life-school,
Begun where first ye taught the child self-rule !

Land of bright river and of rugged hill,
No more my Home, though deeply cherished still,
My own Connecticut whose green grass waves
Over my fairest hopes and holiest graves—
Your wandering son, whose trust is after toil
To lay his ashes in your sacred soil,
Claims yet a share in all your honest pride,
In learning's gift and loyal courage tried.
Yours was the glory earliest to make free
The Common School, great nurse of Liberty,
Whence the proud boast your every child was taught
To read his Bible and record his thought.
Be it your prouder glory to endow
With your broad franchise *all* your children now
Unbound to sex or color, creed or clime,
And barred alone by ignorance and crime.
So may your bannered hope be not in vain
That He who planted will indeed sustain,
And your old vines with this new scion set
Claim well your "*Qui Transtulit Sustinet.*"

OBLIGATORY EDUCATION.

BY B. G. NORTHRUP, SECRETARY CONNECTICUT
BOARD OF EDUCATION.

With growing faith in moral suasion as our main reliance in preventing absenteeism or reclaiming truants, I contend for the authority of the law, with its sterner sanctions to fall back upon in extreme cases. Where parental pride, interest or authority fail, and juvenile perverseness is otherwise incorrigible, legal coercion should be employed.

When the population of Connecticut was homogeneous, as in our early history, there was little absenteeism from school. All valued education, and, with rare exceptions, all native-born citizens could read and write. "Where were you born?" was the inquiry of Judge Daggett, on finding any witness on the stand, or criminal in the dock, who could not read and write, and with only three exceptions, during his long term of judicial service, he never received the answer, "In Connecticut." But recently the great rush of immigration from all the nationalities of the old world has originated startling figures of illiteracy among us. With this ignorance comes indifference to education. One of the worst effects of illiteracy is insensibility to the evils which it engenders. Absenteeism from school may usually be traced to parental indifference, intemperance, or some other evil home influences. Sometimes poverty, loss of parental control on the part of a widowed mother, or full orphanage, and hard experience of neglect and conscious degradation are the sources of this mischief. The juvenile vagrants and beggars who abound in certain European countries are the hardest to get to school or to teach when there. Too many specimens of the same sort, both imported and indigenous, are *now* among us.

But we should not despair of reclaiming the most desperate. Where destitution detains from school, public or private charity should meet the exigency. In cases of extreme poverty, Christian benevolence in every community should supply the lack of decent clothing, and invite the attendance of the most destitute absentees. In Sweden, those children whose parents or guardians are unable to pay for their clothing are to be relieved by the parish. School officers and teachers should visit the parents of neglected children and awaken their interest in education. Their parents, if not intemperate and vicious, are mostly recent immigrants. Of the need and advantages of education they yet know little.

A dormant parental pride, if not a sense of their duty, as the divinely appointed guardians of their offspring, may be awakened. They may be led to see that education will promote their interest and increase their children's happiness, thrift and prosperity through life. Personal kindness, tact and persuasion may win the most perverse.

But after the utmost use of moral suasion, indifference, neglect and truancy will still remain. The ugliest figures in our report are those which record the sad fact that there are 11,947 children between four and sixteen in no school. After making due allowance for invalid children and for those between four and six whom many wise parents deem too young for school, and for those between the ages of fourteen and sixteen who are at work in factories, at trades, or other service, there remain far too many who are growing up in ignorance. The truant laws should be more generally enforced. Truancy should be regarded as incipient crime. Facts too numerous and familiar prove it to be a fruitful source of juvenile immorality. It is highly contagious. One "bad case" makes many more.

My former objections to obligatory attendance were fully removed by observations recently made in Europe. Mingling much with plain people in Germany and other countries where attendance at school is compulsory, I sought in every way to learn their sentiments on this question. After the fullest inquiry in Prussia, especially among laborers of all sorts, I nowhere heard a lisp of objection to this law. The masses everywhere favor it. They say education is a necessity for all. They realize that the school is their privilege. They prize it and are proud of it. Attendance is voluntary in fact. Nobody seems to think of coercion. The law is operative, but it executes itself because it is right and beneficent, and commands universal approval. It is only the legal expression of the public will.

Universal education, more than anything else, has fraternized the great German nation. It has improved her social life, ennobled her homes, promoted private virtue, comfort, and thrift, and secured general prosperity in peace. It has given her unequalled prestige and power in war. "Whatever you would have appear in a nation's life, that you must put into its schools," was long since a Prussian motto. The school has there been the prime agent of loyalty. Love of country is the germ it long ago planted in the heart of every child. The fruit now matured gladdens and enriches the whole land. Wherever that lesson is heeded, it will enrich the world. Devotion to fatherland is a char-

acteristic sentiment of the German people. Shall such a people, with such a history, complain of compulsory attendance? This law itself has been a teacher of the nation. It has everywhere proclaimed the necessity and dignity of the public school. Kings and nobles and ministers of state have combined to confirm and diffuse this sentiment, till now it pervades and assimilates all classes.

The absence of complaint about coercive attendance is not due, as some have supposed, to an enforced reticence or restraint. Proofs of the utmost freedom of speech abound. The Prussian military system is a grievous burden to the people. They dread it and bitterly denounce it. The law which takes every young man from his friends, his business and his home for three weary years of military service is hard, and is freely condemned. Many young families have left their fatherland for America, and thousands more are now planning to emigrate in order to escape this arbitrary conscription. But even the father who is most aggrieved by the army draft, lauds the school draft.

In various parts of Prussia and Saxony, I inquired of school directors, parents, and others, "Do you have any difficulty in executing the coercive law?" The answers were all substantially the same. "Many years ago," replied one, "there was some opposition. But the results of the law have commended it to all, and they obey it without complaint, and almost without exception." The present generation of parents having themselves experienced its advantages, are its advocates. Said a resident of Dresden, "A healthy child of school age can hardly be found in this city who has not attended school. Were the question of compulsory attendance to be decided to-morrow in Saxony by a plebiscite, it would be sustained by an almost unanimous verdict. Public opinion is now stronger even than the law. The people would sooner increase than relax its rigor." I nowhere learned of any recent cases of punishment for infractions of it. In many places I was assured that the penalty is practically unknown.

The principle of obligatory instruction was advocated by the people before it was enacted by the government. The address of Luther to the municipal corporations in 1554, contains the earliest defense of it within my knowledge, in which he says: "Ah, if a State in time of war can oblige its citizens to take up the sword and the musket, has it not still more the power, and is it not its duty, to compel them to instruct their children, since we are all engaged in a most serious warfare waged with the

spirit of evil, which rages in our midst seeking to depopulate the State of its virtuous men? It is my desire, above all things else, that every child should go to school, or be sent there by a magistrate."

The germ of this system in Prussia is found in a decree of Frederic II. in 1763, "We will that all our subjects, parents, guardians and masters send to school those children for whom they are responsible, boys and girls, from their fifth year to the age of fourteen." This royal order was revived in 1794, and in the code of 1819 made more stringent, with severe penalties, first warnings, then small fines, doubling the fines for repeated offences, and finally imprisonment of parents, guardians and masters.

The penalties now are,

1. Admonition, in the form of a note of warning from the president of the local School Commission.

2. Summons to appear before the School Commission, with a reprimand from the presiding officer.

3. Complaint to the magistrate by the Commission, who usually exacts a fine of twenty cents, and for a second offense forty cents, for a third eighty cents, doubling the last fine for each repetition of the offense.

The registers of attendance and absence are kept with scrupulous exactness by the teacher, and delivered to the president of the School Commission. Excuses are accepted for illness, exceedingly severe weather, great distance from school, and sometimes on account of the pressure of work in harvest time.

What are the objections to such a law in Connecticut? So far as I have heard, they are the following:

1. Such a law would create a new crime. I reply, it ought to. To bring up children in ignorance is a crime, and should be treated as such. As the most prolific source of criminality, it should be under the ban of legal condemnation, and the restraint of legal punishment. All modern civilization and legislation has made new crimes. Barbarism recognizes but few. To employ children in factories who are under ten years of age, or who have not attended school, or to employ minors under eighteen years of age more than twelve hours a day, is each a new crime.

2. It interferes with the liberty of parents. I reply again, it ought to, when they are incapacitated by vice or other causes for the performance of essential duties as parents. Many other laws limit personal liberty. The requisition to serve on juries or to aid the sheriff in arresting criminals, or

the exactions of military service in the hour of the country's need,—these and many other laws do this. If the law may prohibit the owner from practicing cruelty upon his horse or ox, it may restrain the parent from dwarfing the mind and debasing the character of his child. If the State may imprison and punish juvenile criminals, it may remove the causes of their crime and its consequences of loss, injury and shame. The child has rights which not even a parent may violate. He may not rob his child of the sacred right of a good education. The law would justly punish a parent for starving his child, and more mischief is done by starving the mind than by famishing the body. The right of a parent to his children is founded on his ability and disposition to supply their wants of body and mind. When a parent is disqualified by intemperance, cruelty or insanity, society justly assumes the control of the children. In ancient Greece the law gave almost unlimited authority to the father over his offspring. The same is true in some semi-barbarous nations now. In all Christian lands, the rights of the parent are held to imply certain correlative duties, and the duty to educate is as positive as to feed and clothe. Neglected children, when not orphans in fact, are virtually such, their parents ignoring their duties, and thus forfeiting their rights as parents. The State should protect the helpless, and especially these, its defenceless wards, who otherwise will be vicious as well as weak.

3. It arrogates new power by the government. So do all quarantine and hygienic regulations, and laws for the abatement of nuisances. Now ignorance is as noxious as the most offensive nuisance, and more destructive than bodily contagions. Self-protection is a fundamental law of society.

4. It is un-American and unadapted to our free institutions. To put the question in the most offensive form, it may be asked, "Would you have policemen drag your children to school?" I answer, "Yes, if it will prevent his dragging them to jail a few years hence." But this law in our land would invoke no "dragging," and no police espionage, or inquisitorial searches. With the annual enumeration and the school registers in hand, and the aid of the teachers and others most conversant with each district, school officers could easily learn who are the absentees.

There is no country of the world more jealous of liberty and more averse to any form of usurpation than our sister republic of Switzerland. It rejoices in being the land of freedom. It glories in free

schools, free speech, free press, free trade, free roads, free bridges; for its roads, though the best in Europe, are without tolls, and even the most costly suspension bridges are free. It has freedom in religion, freedom in traveling, no passports being required and no examination of baggage. No standing army and no gendarmes brandishing the threatening hand of power, as everywhere else in Europe, and yet this free people in all their twenty-two cantons, except four of the smallest, choose for themselves the system of compulsory attendance.

In our country there is every assurance of kindness and conciliation in the execution of the law. The plan is truly democratic, for its entire management is for the people and by the people, through school officers chosen by them and responsible to them. There is a large margin left in the construction of the law now on our statute-book, in reference to children discharged from factory or other work for the purpose of attendance at school. The people plainly approve that law, stringent as are its provisions. I have heard of no opposition to it in any part of the state.

The only objection made to it, within my knowledge, is its limitation to the parents and guardians of those children *who are hired out*. They ask, "While we are justly required to send our children to school, why are the parents of children unemployed, it may be the idle and vicious, excused?" This has the look of class legislation. Make this law impartial and universal in its application, and you remove the only real objection as yet urged against it. This growing class of idle and ignorant children now claim our earnest attention. This law has already accomplished great good, and brought into our schools many children, otherwise absentees. There have been no penalties, no prosecutions even. The law itself has been a moral force. It is itself an effective advocate of education to the very class who need it most. Were the same law made universal in its application, I anticipate no opposition, no infliction of penalties, no legal processes whatever. The silent authority of the law will add force to the other arguments and persuasions which must ever be our chief reliance. It will encourage the friends of public schools to increased efforts in urging upon the indifferent and ignorant the great advantages of education. In the construction of the proposed law also, there will be a large margin; there will be conciliation and careful consideration of the circumstances and extenuations of each case.

It is largely through immigration that the num-

ber of ignorant, vagrant and criminal youth has recently multiplied to an extent truly alarming in some of our cities. Their depravity is sometimes defiant and their resistance to moral suasion is obstinate. When personal effort and persuasion and organized benevolence have utterly failed, let the law take them in hand, first to the public school, and if there incorrigible, then to the Reform School. Those who need education most and prize it least are fit subjects for coercion, when all persuasives are in vain. The great influx of this foreign element has so far changed the condition of society as to require new legislation to meet the new exigency. The logic of events demands the recognition of compulsion, for we have imported parents so imbruted as to compel their young children to work for their grog and even to beg and steal in the streets when they should be in schools.

5. Compulsory education is monarchical in its origin and history. Common as is this impression, it is erroneous. Connecticut may justly claim to be one of the first States in the world to establish the principle of compulsory education. On this point our earliest laws were most rigid. They need but slight modification to adapt them to the changed circumstances of the present. Before the peace of Westphalia, before Prussia existed as a kingdom, and while Frederic William was only "elector of Brandenburg," Connecticut adopted coercive education.

The code of 1650, so-called, comprised "a body of laws for the government of this Commonwealth," which was adopted in May of that year. In this code are the following stringent provisions for compulsory attendance:

"Forasmuch as the good education of children is of singular behoofe and benefit to any Commonwealth, and whereas many Parents and Masters are too indulgent and negligent of their duty in that kind;

"It is therefore ordered by this court, and the authority thereof, that the selectmen of every town, in the several precincts and quarters where they dwell, shall have a vigilant eye over their brethren and neighbors, to see, First, that none of them shall suffer so much barbarism in any of their families, as not to endeavor to teach, by themselves or others, their children and apprentices, so much learning as may enable them perfectly to read the English tongue, and knowledge of the Capital laws; upon penalty of *twenty shillings* for each neglect therein.

"And further, that all parents and masters do breed and bring up their children and apprentices

in some honest lawful calling, labor or employment, either in husbandry or some other trade, profitable to themselves and the Commonwealth, if they will not or cannot train them up in learning, to fit them for higher employments.

"And if any of the selectmen, after admonition by them given to such masters of families, shall find them still negligent of their duty in the particulars afore mentioned, whereby children and servants become rude, stubborn, and unruly; the said selectmen, with the help of two magistrates, shall take such children or apprentices from them, and place them with some masters (boys till they come to *twenty-one*, and girls to *eighteen years* of age complete), which will more strictly look unto, and force them to submit unto government, according to the rules of this order, if by fair means and former instructions they will not be drawn unto it."

The code of 1650, containing the above provisions, remained, with some modifications, chiefly designed to give them greater efficacy, for one hundred and fifty years, until the revision of 1801.

In our early history, public opinion so heartily endorsed the principle of compulsory attendance, or rather, so thoroughly believed in the necessity of universal education and so generally desired and secured it for children and wards, that attendance lost its involuntary character. No doubt the law itself originally contributed to diffuse and deepen this sentiment. If at first it was the cause, it became at length only the expression of public opinion. The requirement of this law that "**THE BARBARISM**" of ignorance should not be tolerated in any family, helped to make it disgraceful to keep even an apprentice from school. To bring up a child or ward in ignorance was shameful, and **BARBAROUS** in the eyes of our fathers. This is still the sentiment of the genuine Connecticut "Yankee." High appreciation of education is one of the most precious traditions of our State. To it we owe our growth, prosperity and liberty. But now we are a polyglot people. Immigrants from every nation of Europe abound, and some have come from Asia and the islands of the sea. The Germans and Jews, the Hollanders, Scotch, Swedes and Swiss, almost without exception, and most of the Irish, favor universal education. But there have come among us many others, ignorant themselves, and caring not if their children grow up like them. They are so ignorant as to be insensible to the evils of illiteracy. Yet, on the other hand, there is a growing number of immigrants, who, realizing how they have suffered

all their lives from ignorance, desire a good education for their children.

6. The most plausible objection to such a law is that it would sometimes bring hardship upon poor parents. But our existing law provides for extreme cases, and authorizes the School Visitors to make such exceptions as necessity may require.

No public officers will show more sympathy to the poor. In their hands the administration of the law will be kind and paternal. The right to enforce will be used mainly as an argument to persuade—an authoritative appeal to their good sense and parental pride. If any parents are too poor to send their children to school, individual charities or town benefactions cannot be better expended than for their relief. It is a short-sighted policy to permit indigence to perpetuate ignorance. The poor should not be left to transmit their poverty, by robbing their children of the sacred rights of education. If the schooling of all should involve some hardship, evils more and greater far would follow from ignorance. Better stint the stomach for three months a year, if need be, than famish the mind for life. There need be, and in this land of plenty, there would be, no starvation to the body, while that education is insured which will lessen the amount of hardship and poverty a thousandfold.

7. It has been objected that the school system has taken so deep a root in the sympathies and social habits of the German people, that attendance would be just as large without the law as it is now. It may be so. But so far from being an objection, this fact is strong proof of the efficiency of that law which has itself helped create so healthful a public sentiment. Were the law to be abrogated to-morrow, the individual and general interest in public education would remain. The same might have been said of Connecticut for more than one hundred and seventy years after the adoption of compulsory education. During all that period, a native of this State of mature age unable to read the English language would have been looked upon as a prodigy. Still, in Connecticut as well as in Germany, it was the law itself which greatly aided in awakening public interest, and in fixing the habits, associations and traditions of the people.

8. It has been said that in some countries, without any coercive law, the attendance is as good as in Prussia or Saxony with such a law. This is simply a mistake. Holland has been cited as an illustration of this statement. But while the Dutch show commendable zeal for public schools, the attendance is not relatively as large as in Prussia, and

illiteracy is by no means so rare as in Germany. But Holland *has*, indirectly, a system of compulsory attendance. It denies certain immunities and privileges and honors to the uneducated. The parents of children who are not instructed up to the required standard cannot receive relief from certain charitable institutions. The ban of legal condemnation falls upon them as truly, though not as effectively, as in Prussia.

In Rotterdam, Hague, Amsterdam and elsewhere in Holland, I was assured that the working classes regard the school law as practically compulsory. No one is permitted to teach even a private school who has not been duly "examined and approved," and the public supervision includes private as well as public schools.

The tendency throughout all Europe is more than ever toward the recognition of the right and duty of the State to educate its entire population. Public sentiment, educated by recent events, now connects ignorance with crime, and poverty with individual and national weakness, as cause and effect. Sadowa taught Austria, and indeed all Europe, a salutary lesson. "Defeated in war, let it be our policy to excel in the arts of peace," became the national idea under the inspiration of Count Beust. There was no wasting of zeal and strength in the mad cry of revenge, as now in prostrate France. Austria was not unwilling to learn from an enemy, and adopted the educational system of her conqueror. Her school system was reorganized and vitalized, and the principle of compulsory attendance made prominent. Education is obligatory in Denmark, Norway, Sweden, and also in Switzerland, except in the four small cantons of Geneva, Schwyz Uri and Unterwalden. The total population of these four cantons is less than one-seventeenth that of the whole nation. The new school law of Italy provides for both free schools and obligatory attendance, and includes the following important "civil service reform;"—"No one can be appointed to any State, Provincial or Communal office whatever, who cannot read and write."

More than thirty years ago, Guizot, in his educational Report to the French government, ably opposed obligatory education, but the recent experience of France has changed his views, and now he is its earnest advocate. That one of his advanced age, long among the foremost men of France both as a scholar and statesman, cautious yet positive in his convictions, a historian in his tastes and studies and therefore conservative, should now stoutly advocate that compulsory system which he

so successfully opposed when himself the Minister of Public Instruction in 1833, is significant. The logic of events during the last forty years proves that the very system which he largely originated is unsuited to the wants of the nation and the age. M. Jules Simon, the Minister of Public Instruction, explained to me his plan for the reorganization of Primary Instruction, by making it both gratuitous and compulsory. The penalties were to be a maximum fine of one hundred francs and *loss of suffrage for three years*. After the year 1880, no citizen was to become a voter who could not read and write. But his bill is likely to fail at Versailles. While Thiers proposed an increase of eighty millions in the budget for the army, he said nothing for education. Even under Napoleon, fifteen times more was spent for the army than for education, including Primary, Secondary and Superior. The provisions for superior education were liberal, and absorbed nearly one-half of the whole appropriation, leaving the primary schools most meager, both in quantity and quality. The Ultramontane party, now dominant, stoutly oppose both gratuitous and obligatory instruction, and little is likely to be done for the better education of the masses. The objection that obligatory instruction would challenge resistance as an act of usurpation, seems ludicrous in a land where military conscription and the most rigorous police surveillance are universal and unresisted. Gambetta as well as Guizot and the liberal republicans strongly advocate obligatory education. Even the Commune favored universal and compulsory education, as also do the majority of the Parisians still. The opposition comes from the clerical and conservative parties.

The new school law of England *permits* all local boards to enforce attendance. Public sentiment throughout England is now changing rapidly in favor of making compulsory attendance national and universal, instead of permissive. As one of many illustrations of this change, Rev. Canon Kingsley, formerly favoring non-compulsion, now advocates the compulsory principle.

The motto of the National Education League, of which George Dixon, M.P., is president, is, "EDUCATION MUST BE UNIVERSAL, UNSECTARIAN, COMPULSORY." At the late General Conference of Non-conformists held in Manchester, January, 1872, and attended by 1,885 delegates, there seemed to be great unanimity in favor of enforced attendance. This assembly was as remarkable in its character as its numbers. The argument of Mr. Jacob Bright, M.P., on this subject was received with

great applause. He said that the best part of the Education Act, which is worth all the rest put together, is the permission to compel attendance.

The laboring classes are not opposed to such a law. They would welcome it. In England the working classes are asking for a *national compulsory* system of education. By invitation of A. J. Mundella, M.P., I attended the National Trades Union Congress held at Nottingham for the week beginning January 8th, 1872. That body seemed unanimous in favor of compulsory attendance. One of the leading members, an able and effective speaker, said that in large and crowded assemblies of working men he had often distinctly asked, "Do you agree with me that we want a national compulsory system of education?" and not a dissenting voice had he ever heard from the working men.

Obligatory attendance is a corollary from the compulsory school tax. The power that claims public money for the purpose of educating and elevating all classes may justly provide that such public expenditure shall not fail of its appropriate end through the vice, intemperance, or perverseness of parents. The state has the same right to compel the ignorant to learn that it has to compel the penurious to pay for that learning. If education is of universal interest, it must be universal in its diffusion. Many tax-payers have said to me, "If you compel us, who have no children, to support schools for the good of the State, you must effectively provide that the children of the State fail not to share the advantages thus provided. While we, willing or unwilling, must support the schools, the children, by constraint if not from choice, should attend school."

Universal suffrage involves the necessity of universal education. Self-protection is the first law of the State as of individuals. To perpetuate ignorance would be suicidal to the State.

Obligatory instruction is needed in Connecticut, and still more in other States. Massachusetts and Connecticut were long the pioneers in education. Many States copied from us. The Ohio common school system was originally taken almost verbatim from Connecticut, and a large portion of that State was in fact as well as in name "New Connecticut." The public schools of our State were then the best in the country. Our honored fathers builded wisely on the broad foundation of universal and obligatory instruction. Their example has been a power in this land, and is known and honored throughout all christendom. Text books published in New York and Philadelphia lauded the school system of Conn.

But other States are now striving to be abreast

with us. Many of them already far surpass us in population and wealth, as they have always done in territory and natural resources. Our preëminence can be maintained only by our ideas and our men, for the true wealth and power of a State consists in its men, in its treasures of cultivated mind.

The fact that obligatory instruction is needed in other States is a good reason for its adoption here. Our past history illustrates the advantages and working of the principle. Its reënactment here, with the modifications suited to present exigencies, will impress the legislation of the country. Even in the English Parliament, recent Connecticut Reports have been quoted as authority on free schools. Let it be known that Connecticut, after a trial for two hundred and twenty two years, has re-affirmed this old plan, and the lesson will be heeded elsewhere. In establishing this principle for herself, Connecticut will help settle it for the country. It is the most important school question of modern times. It is now up for discussion in many American States. It is the leading question which divides the friends of education in France and England. In this great conflict, no State can help more than Connecticut. Our plans should embrace more than our boundaries. The interests of all the American States are virtually one. Like that of Switzerland, our motto should be, "one for all, all for one." The unification of Germany and of Italy,—the most important of the recent political events in Europe,—are largely the results of public instructions. Our people also, diverse in race and character, need now to be fused into one. More than any thing else will universal education thus fraternize all. The extension of the franchise in our country demands a corresponding expansion of the school. To give the ballot to the ignorant would be suicidal to the nation. In the interest of public morality and order, the security of property and life, as for the safety and perpetuity of our free institutions, every agency should be employed to secure universal education.

YOUNG TEACHERS' DEPARTMENT

THE ART OF TEACHING.

BY A. G. BOYDEN, PRINCIPAL OF THE BRIDGEWATER (MASS.) NORMAL SCHOOL.

What is teaching? Let us illustrate and define. *Teacher.* (requiring the pupil to pass his hand over the surface of the blackboard) What kind of a sur-

face is it? *Pupil.* A flat or plane surface. *Teacher.* Make four straight lines meeting each other. What do these lines inclose? *Pupil.* A portion of a plane. Write the words on the board. How is this portion of a plane bounded? It is bounded by straight lines. Write this under the first. Bounded by how many lines? Four. Write. Tell me what you have. A portion of a plane, bounded by straight lines, four in number.

What is any portion of a plane bounded by lines called? A plane figure. Describe this figure. It is a four sided plane figure. Quadrilateral means having four sides. What may you call this figure? A quadrilateral. Right. What is a quadrilateral? A quadrilateral is a plane figure bounded by four straight lines. Make six quadrilaterals on the board.

Observing carefully this illustration of teaching we derive our definition from it, namely: *Teaching is presenting an object of thought to the mind of the pupil in such a manner as to lead him to think and gain knowledge.*

First. The teacher presents the object of thought in such a way as to secure the attention of the pupil. The vital element of all teaching is mental activity. The mind of the teacher must lead the mind of the pupil. It is not merely a cold, intellectual process. Thought, feeling and volition are all involved.

The teacher must be earnest, definite, sympathetic. Thus led, the pupil apprehends the object of thought, feels an interest, and voluntarily gives himself to the lead of the teacher. The pupil's mind must be actively at work with the teacher. One cannot teach if he has not the power to hold the attention of the pupil. Since in schools we must teach classes, the teacher must have the power to hold the attention of every member of his class, or he fails in his work.

Second. The teacher, by appropriate questions, leads the pupil to discover for himself the truths he would have him learn, and then to state them. He tells the pupil that which he cannot find out for himself without too much time and effort. He leads the pupil to think. The pupil must think for himself, must get the knowledge for himself. In this way he learns to think and to express his thoughts. He gets *ideas* first, then the right words for their expression. This is the natural order. The words thus learned have meaning.

Third. The pupil by his own thinking gains knowledge, the only way in which he can acquire it. It is real knowledge which he can use. In this illustration the knowledge gained is a definition, the sum of the essential marks of the object, the marks which belong in common to all quadrilaterals.

All that the teacher can do for his pupil is to present to his mind the right object of thought in the right way. The pupil, under the guidance of the teacher, must think for himself, must gain knowledge for himself, and thus he acquires the ability and the inclination to make the right use of his mental power. When by the oral teaching now described, the pupil has gained ideas and associated them with their appropriate words, the author may be his teacher. He can then read the printed page and be led by it to think and gain knowledge. This is the written method of teaching. Both methods are necessary, but oral teaching is vastly more effective than written. It is indispensable in all branches of study, and with all grades of pupils. With the youngest pupil no other can be used. As the pupil learns how to study and gets a love for it, less oral teaching and more of written may be used; but so long as the living teacher is needed by the pupil, it is mainly for the oral teaching which he gives. The object of oral teaching is three-fold; to show the pupil *what* to study, to teach him *how* to study, and to excite his interest in the work. To accomplish this object the oral teaching should be given when the lesson is assigned to the pupil; then he knows how to prepare himself for a thorough examination upon the lesson,—a subsequent part of the teacher's work, and indispensable to the pupil,—to the end that he may become an independent, self-reliant worker.

Teacher and pupil must work together, must be in sympathy. If the pupil has no appetite for intellectual food, the teacher must create one; he must be able to excite an interest in subjects of study which are not in themselves attractive to the pupil. The art of teaching, then, includes all the means by which the teacher sustains the attention of his class.

What are the conditions for securing the attention of pupils? First of all, the teacher must know the laws of mental activity; he must know what the powers of the mind are, and how they are called into exercise. One who would lead another must know how to address him so that he will be willing to follow. The teacher must not only know the general laws of mental activity, but he must form a distinct and definite estimate of the mental and moral character of each pupil. How else can he bring them into sympathy with himself and inspire them with a love for the work that shall secure their vigorous effort for its accomplishment.

Not only must the teacher know the mind he is to teach, but he must thoroughly know the subject

he is to present ; he must know much more than he teaches, and he must have a ready command of his knowledge. The want of knowledge is the greatest hindrance to success. It makes the attempt to teach irksome, oftentimes disgusting, while the right use of this knowledge of the mind and the subject-matter makes teaching one of the most delightful of all occupations.

Not all of any subject can be taught ; hence, the teacher must select what the pupil can understand and what is most important for him to know.

Every lesson should have a *definite aim*. The teacher should decide what points he will make, in what order he will take them, and how he will present them. Such teaching will be like a well defined sermon, which an earnest listener commended by saying, "I like that kind of preaching ; there is something in it you can grab." It makes an impression.

The first question every teacher should ask in selecting the points of a lesson is, What do my pupils know of this subject ? We must begin with what the pupil knows if we would carry him successfully forward to higher attainments.

Another condition of success is the *proper arrangement of the ideas* to be taught. All lessons should be given in topics. By a topic we mean a distinct subject of thought. Topics may be given orally to young pupils, with older pupils they may be given as printed in a well arranged text-book, or they may be given in writing. The pupil should be able to tell the subject of his lesson, and give the outline of topics which it contains. Such an arrangement of lessons avoids confusion in the teaching, helps the pupil to understand and remember it ; the lesson gives him real knowledge, and accustoms him to think in a logical manner.

Attention is to be gained by observing the *right mode of communicating ideas*. Lessons must be made plain to pupils. Ideas and facts are to be stated in their simplest form. Many ideas must be illustrated to make them clear to the mind of the pupil. This may be done by the use of verbal illustrations, or by the use of objects, or by diagrams and pictures. Definitions are to be worked out from observation and illustration after the manner indicated in the opening of this article.

Care in regard to the language used in teaching is very important in securing attention. The teacher's language is the medium of his thought ; as such it should be *simple* in the words and in the construction used. It should be *precise*, exactly conveying his meaning and nothing more. It is

a model for his pupils, and should be worthy of their imitation. Good utterance is of the highest importance in securing attention. The teacher cannot do too much good in improving his manner of speaking.

Last, but not least, is the teacher's manner. Every movement and every attitude is observed, and has its influence. A good manner tells strongly in the teacher's favor. The teacher should be cheerful, animated, self-possessed, enthusiastic, and decided. Such a manner will command attention.

A full lecture might be written upon any one of the points we have briefly touched upon. If what has been written shall suggest what might have been said, the end of this article is reached.—*The (Mass.) Teacher.*

MISCELLANY.

LIGHT AND COLOR IN NATURAL BEAUTY.

TRANSLATED FROM THE GERMAN OF CH. OESER.

How many an otherwise beautiful landscape seems entirely dead and expressionless, when it is seen covered by a grey cloudy sky, which hinders the play of light ! But see ! the clouds separate ; streams of golden light flow down upon every hill, separating the dark green pine woods from the light vineyards, and bathing the old walls of the ruin in youth-renewing rosy red ; and into this indifferent, characterless face, life comes suddenly, and a soul speaks from its features ! The sunbeam kindles the hard earthy substance, not merely for the feeling ; it warms and enlivens matter for the eye also, spiritualizes the stiffness into the ethereal, and every limitation of the object, every part of its surface becomes a speaking countenance. But pure colorless light must be decomposed ; must enter into the various pictured bodies in different combinations ; must in a word become color, in order that the beautiful world may appear, gaining æsthetic importance for the eye. If everything around us were sunlight, then must we be only pure beings of light in order to endure it ; if everything, heaven and earth, were blue or green, then would we also know of no color ; the beautiful variety would be lost, because contrast would be wanting. The day must be born of the night ; the light stream forth from the darkness ; and as upon the blue heavens the golden stars shine together with the silver light of the moon, so must blue and white, red and yellow flowers blossom upon the green earth ; green foliage must wave upon black-grey or gold-brown or whitish branches ; the sand of the wilderness and the grain-fields, sea and rock, must be contrasted in color. As the darkness wishes for the

light, and light splendor displays its glory most beautifully upon the dark ground, as yellow and blue unite in a new color, and green, which bears a shadow in itself—the blue—complements the red; so must one color seek the aid of the others, where it does not remove but only softens the contrast; it must show in all diversity, that it reposes on a common unity, and has gone forth from the one same light.

Yellow is the strongest light-color. Yellow and yellow-red are strongly bright; they stand next to the sunlight, are life-wakening like it, and render the mind cheerful and bright; but they also shine easily, and in their shining, (as in silk or gold), are most beautiful. Although they are merely a dimness, a shadowing of pure light, yet as they stand so near to it, they can least bear a taint. A dirty yellow is ugly.

The red beam is especially a bearer of warmth; it is produced by the longest light-waves; it unites with its strength also some roughness, and not seldom a glare which hurts the eye. A blind man compares the feeling of the surface of a red body to the sound of a trumpet. The red blood is beautiful only in showing through the white skin. In this softening we behold the color of fresh pulsing life, of young life-pleasure, of love which possesses in the red of the hundred-leaved rose its most beautiful symbol. In purple-red the heating beam becomes softened, but verges to the black; it is in contrast therefore with the freshness of youth; it is more earnest, self-conscious—the symbol of power.

Orange, the mixture of red and yellow, is not separate and fixed as the red is, not restful, as the glowing coal, but wavers as the flame, and is animating and unquiet, yet warming like it.

Blue has narrower wave-breadth and less power of light than yellow and red; it bears a shadow with it, and is accordingly the opposite of the shining yellow, just as white and black stand over against each other in still greater contrast. In blue the retiring veils itself; it hides from sight the distance, the sea, and the sky. When blue prevails all color-play of light becomes lost in one homogeneous deep grave tone. But it reveals also the first approach of colors. Light flying through the heavens leaves the empty space behind black and unchanged, and when it touches the atmosphere of our earth expands first into blue color, which has behind it the black background, the empty space, but before it light sunny life. Night has been called the mother of things, from whose darkness they have all sprung; blue is at the same time the daughter of darkness and of light and forms between the two the friendly mean: in it Night and Day are eternally harmonized. Through this peculiarity it acquires the character of aspiration. Blue violets rise out of the dark bosom of the earth, allured by the first spring sunshine, awaking the hope of lovelier, sunnier days. Still more surely the mixture of blue and red, whereby the violet is produced, indicates the strife after fullness of life.

The blue light-beam exercises upon the germinating and growth of plants a powerful chemical effect. If you let the sunlight fall through red and blue glass, into a dark box in which cress-seed have been placed, the little stems will bend towards the blue light, while the roots seek after the warmth-giving red light. So also the branches of the trees stretch forth into the "blue ether," and give us, as Humboldt beautifully remarks, a type of aspiration. The oxygen, set free by plants, is given up most quickly to the yellow light. Yellow-green light is most favorable to the growth of flowers, therefore one should place in his conservatories, glass of this color; and nature itself indicates the same to us, in that she surrounds the flowers with a green roof of foliage.

In green, which neutralizes the contrast of blue, the color of aspiration, and yellow, the color of full possession, there is something quieting. The distant future (blue) appears in the sunny present (yellow). The yellow streaming light is moistened by the tender shadow and thus softened. Green is the fundamental color of plant-clothing; upon this the mildest of colors the eye can linger longest, and rest from the stiff and rough contrasts, which the sanguinary animal world or the too vehement sun-beams present; the color of budding life, covering of the brightly colored blossoms in the cup, is the color of hope.

Grey is a mixture of black and white, phlegmatic, dull, indifferent, but it is of use in contrast with glaring coloring.

Of brown the aesthetic Vischer says: "This belongs neither to the principal colors, nor to the prismatic divisions, (the seven rainbow colors); it is a mixture in unequal parts of yellow, blue, and red; red, however, is predominant, and gives to the indifference, which without its interfering influence would arise from the yellow and blue, the signification of power and strength. Brown is the fertile sustaining soil for plants and animals; it appears as the color of usefulness; a brown skin gives the proper expressiveness of shadows to the complexion, and is yet less gloomy than black. Brown softens also the severity and sadness of black, and brings into it a warm tone."

As in specific colors, many others mingle, so light and shadow are mixed in every one in different degrees; the tone of one and the same color is stronger, and more intense, or weaker, vanishing, and softly dying away. By this contrasts are softened; the transition from one to the other becomes easier. If you look at a rainbow, this bow of triumph, of color-majesty, born from the light, you will see this transition wonderfully accomplished. As in music, major and minor alternate, one tone passing over into the other, returning again from longer transitions into the tonic, and as in execution, crescendo and decrescendo, forte and piano lead the tone-waves to the ear, now weaker, now stronger, quicker and slower; so the light plays with its colors

a concert in various keys and measures ; writes here a maestoso, there an amoro, here an elegiac andante, there a sparkling presto. And not only is a landscape, with its meadows and woods, mountain and valley, river and sea, a color-symphony, but every tree and every flower also displays this in miniature. How often with ingenious hand, directed by an aesthetic taste, is a flower-concert arranged in bouquets, in which a delicately colored flower receives its proper place near one darkly glowing, in order to brighten its beauty and soften the strong tone of its neighbor ; in which little groups are formed, which unite the congruous, and yet avoid dead uniformity, and by working together produce a harmonious impression, such as Beauty, considered as Unity in Variety, demands. Not every one understands the arranging of a bouquet, and many hold, like the savages, that what is simply variegated is beautiful.

Nature it is true often makes very harsh color-combinations, but considered as a great whole, the roughness and apparent capriciousness vanish. The bright colored flowers express the strong effects of light that characterizes the tropical world ; so does the splendid, far-shining feather-coverings of the birds, and even the fishes in the sea swim in silver and gold and purple colors. In our northern pine forests, under pale blue skies and in cloudy atmosphere, the variegated parrots would be too strong a contrast. Our speckled woodpeckers and nutcrackers are quite variegated and brilliant enough. The same nature, the creative, governing reason of the Lord of all beings, which gave to the Northerner a whiter, tenderer skin and blonde hair, bestowed on the deeper colored skin of the Southerner, black hair, which, becoming stiffer, suits the sharp-cut face of the South, just as the blonde hair harmonizes with the more melting physiognomy of the North. The Oriental imitates instinctively the Creator and chooses lively, often glaring, colors, for his clothing, while the Occidental shuns all harshness and conspicuousness, and by the avoidance of unblending contrasts, and by harmonious combination, chooses colors suitable to his individuality, his age, and disposition.

TECHNICAL INSTRUCTION IN ITALY.

One of the means by which educational information is disseminated in the country by the Bureau of Education, is by pamphlets called "Circular of Information of the Bureau of Education." These pamphlets contain educational matter which is difficult to obtain from any other source, gotten up under the charge of the Commissioner of Education, and are issued as often as circumstances permit. The Circular for February, issued not long since, contains a report upon education in Greece, received from Hon. John Francis, United States minister resident at Athens ; a report upon Education in the Argentine Republic, and information in respect

to education in Chili and Ecuador ; statistics in reference to elementary education in Portugal, prepared by Mr. Rodriguez, editor of "*O Novo Mundo*;" Notes on School Education in Japan, furnished by Commissioner Tanaka, and the official report for 1870, upon Technical Education in Italy, obtained through the Bureau of Statistics. These papers, taken as a whole, present a large amount of valuable information in reference to the progress of education throughout the world, and the thanks of educators throughout the country are due to Commissioner Eaton for securing them and giving them circulation.

From the last of these, the Report on Technical Instruction in Italy, we propose to draw a few facts which may prove of interest. The technical instruction of Italy is given under four heads or subdivisions. These comprise the instruction furnished : 1. In popular schools of arts, trades and industrial drawing. 2. In military and moral schools. 3. In schools which give technical instruction of the second grade ; and 4. In schools which furnish superior technical instruction.

The schools of the first class mentioned above are benevolent institutions, established by private and municipal associations. They are found throughout the whole peninsula, and their object is to furnish information to workmen such as will be useful to them in their various trades. Accordingly, some of the schools are for masons, some for carpenters, some for blacksmiths, cabinetmakers, etc., while in others ornamental and geometrical drawing applied to various industries, are taught ; and some have even a course in chemistry as applied to some industry. At the beginning of the year 1870 there were 154 of these schools in operation, employing 567 teachers, and attended by 13,329 pupils.

The military and naval schools are eleven in number, of which eight are military and three naval. The object of these schools is to prepare young men for officers and non-commissioned officers in the army and navy. The military schools are divided into grades, as follows : 1. Superior institutions, which comprehend the Royal Military Academy at Turin, and the School for Cavalry and Military Officers at Modena. 2. Secondary institutions which embrace the Military Colleges at Milan and at Naples. 3. Gratuitous schools embracing the Battalion Schools for sons of soldiers at Racconigi and Maddaloni ; and 4. Normal Schools, comprehending the Normal Schools for Infantry and for Cavalry. The course of instruction in the superior, secondary and normal schools lasts three years ; that in the gratuitous schools but two. In the naval schools, which comprehend the Royal Naval Academies at Naples and at Genoa, and the school for machinists and instructors, the course of instruction lasts four years. In the first two institutions during the first three years, eight months are spent in college and four on shipboard, while during the last year six months are given to each.

The schools which give technical instruction of the second grade have courses in agriculture, in the commercial sciences, in mechanics, in metallurgy, and in chemical industry. Some of them are devoted entirely to one course of instruction, while in others there are three. There are seventy-eight of these schools in all, and they had, in 1870, eight hundred and twenty-two teachers and 5,578 pupils. The number of schools of this kind has risen rapidly since 1860. There were in that year only four technical schools in the country, and these quite unsatisfactory, but a gradual increase has carried the number up to seventy-eight. Sixteen were founded in 1862 and thirteen in 1866. The largest number of schools in one province is in Lombardy which has twelve, and Piedmont follows with eleven. Liguria and Emilia have each nine, Sicily, seven, and Venetia, six. Of these schools fifty-four are either governmental or are assisted by the government, while twenty-four are entirely independent of such aid.

The schools for superior technical instruction are three in number, the Superior School of Commerce at Venice; the Superior School of Agriculture at Milan, and the Superior School of Navigation at Genoa. To these should perhaps be added the Royal Italian Industrial Museum at Turin. The first of these superior institutions was established by a decree of August 6th, 1868. It is intended to educate competent teachers for business colleges, and partakes somewhat therefore of the nature of a normal school. The course of instruction embraces both modern European and Oriental languages; among the latter, Arabic, Turkish, and Persian. There is also a course of instruction for the education of consuls in foreign countries, which last four years. The normal course lasts three, and a supplementary business course two years. Among the topics taught are commercial literature, commercial geography, knowledge of goods, book-keeping, the principles of commercial law and practice, foreign languages, commercial statistics, etc. The number of students in this institution in, 1870, was 109. It is supported by the general, provincial and municipal governments, assisted by the Chamber of Commerce.

The Superior School of Agriculture at Milan was established by a royal decree of April 10th, 1870, and is supported in the same way as the School of Commerce, except that the stipend from the Chamber of Commerce is wanting. This institution, which was to be opened for the scholastic year of '70-'71, was to have courses of agriculture, a normal school for the education of professors of agriculture, and special courses for heads of great agricultural enterprises. An effort was also to be made to advance agriculture by experiments.

The Superior School of Navigation at Genoa, was founded by royal decree of June 25th, 1870. It was to be supported in the same manner as the School of Commerce. This school was to have two sections a nautical section to be devoted to the education of professors of navigation, and a section of naval instruction for the education of com-

petent naval engineers. Among the studies to be taught in the first section are nautical astronomy, navigation, hydrography, physical geography, meteorology, commercial economy, etc. The course of instruction in the other sections is to embrace mechanics applied to naval, construction and machinery, theory of ships and shipbuilding, theory of steam-engines, drawing of machinery, naval construction, etc. The school is to be under the charge of a directing board composed of representatives of the government and the other authorities contributing to its maintenance.

The Royal Italian Industrial Museum at Turin was founded in 1866, and was entirely reorganized in 1869. It combines the following institutions: The school and laboratory of Chemical Technology, well supplied with lecture rooms, working laboratories and apparatus; the Physical Laboratory and Cabinet, which has a lecture-room capable of seating two hundred; a hall for Mechanical Experiments; a Drawing School, and a well-filled Museum. The museum of dendrology connected with the latter is said to have the richest collection of wood specimens in the world.

From this brief review of the condition of technical education in Italy, it will be seen that the prospect is most encouraging. Many, in fact most of the schools, are young, but with the impetus which they must receive from the growth of liberal ideas in that country, they will expand in rapid development. It is gratifying to know that the government fosters and favors these institutions in every way possible.

ART EDUCATION IN MASSACHUSETTS.

The work of art education in the State of Massachusetts, is assuming a tangible shape and form under the charge of the State Director, Mr. Walter Smith, that is exceedingly gratifying and that promises well for the future. An exhibition of the works of the Drawing classes in the various cities and towns, has recently been held, and the report of the committee appointed to make awards for excellence has been published. From this we learn that the exhibition represented the results obtained in the Free Evening Drawing Schools held during the past winter in Haverhill, Lawrence, Lowell, Lynn, New Bedford, Newton, Northampton, Springfield, Taunton, Worcester, and Boston. The drawings on exhibition comprised "exercises from the blackboard, of free hand, geometrical, mechanical, isometrical, and constructional drawing in out-line and tinted; drawing in light and shade and color, of foliage, figures animal forms, machine drawing and architectural tinting; designs for buildings, for carpets, etc., natural objects, geometric, solids in shadow and color, and many other branches of industrial art study." There were 612 drawings exhibited, and of these 215 were free hand and 397, instrumental. Some were drawn

from the blackboard, some from flat copy, and some from the object itself. Twenty-seven of the drawings were regarded as of highest merit and were designated by the word, "excellent," while 89 received the award "honorable mention." The drawings from Boston were best both in number and quality, a result the committee attributed to superior advantages in objects to draw from. Some of the towns which have drawing classes had no works in the exhibition, and in some no classes have been organized.

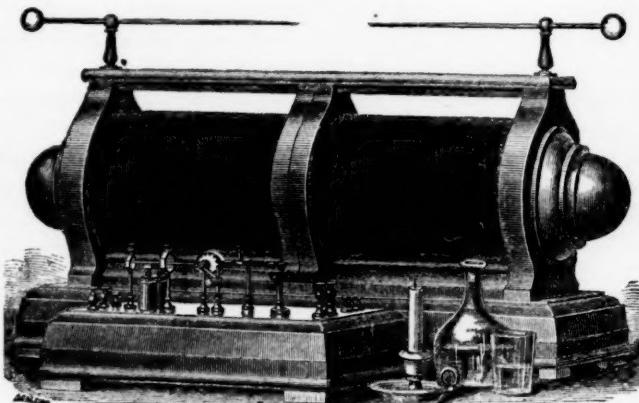
RARE INSTRUMENTS AT STEVENS INSTITUTE.

The collection of instruments for class exhibition in the various departments of instruction at the Stevens Institute of Technology, at Hoboken, N. J., whose building we illustrated in our last number, is very remarkable, both for its extent, and for the superior excellence of the apparatus.

The accompanying illustrations will give our readers an idea of two of the finest of these instruments whose report has already gone forth through the land.

One is the large Ruhmkorff induction coil giving a twenty-one inch spark. This, and one giving an eight inch spark, were made by E. S. Richie, of Boston. A smaller one of French manufacture is in the collection.

The other instrument is the largest electro-magnet yet constructed, weighing nearly a ton, containing in its eight spools some two thousand feet of wire, one-fifth of an inch in diameter, and provided with all the attachments for experiments in Diamagnetism.

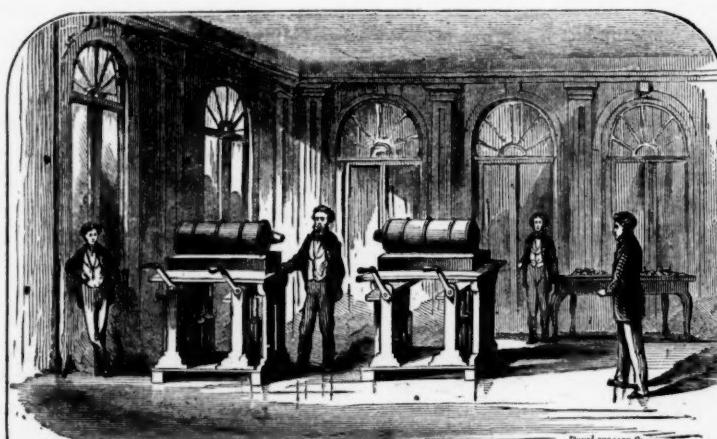


LARGE INDUCTION COIL.

was Kai Sei Jo (Place of Reform.)

The school had an existence of this sort for several years. It was broken up by civil war.

When peace came again, the Shiogun was in exile; the Mikado was supreme in power. The revolution had set the country a century forward. The school was reopened, and the Prince of Echizen —so conspicuous in his opposition to the old law of the Shiogunate, compelling the Daimios to a forced residence in Yedo of six



ELECTRO MAGNET, WEIGHING 1,800 POUNDS.

months yearly, and the reputed author of an able document advocating tolerance of Christianity, was ap-

THE IMPERIAL COLLEGE IN YEDO.

BY WILLIAM E. GRIFFIS.

The recent visit of the Mikado to the college in Yedo suggests the present as a fit time to speak of the history and status of that institution. Its flourishing condition now is in striking contrast to its humble beginning.

Foreign literature and science first entered Japan through the Dutch, at Nagasaki. When the other ports were opened, however, German, English, and French began to be studied, mostly by Ronins—young men who left the feudal service of their princes to engage in the then despised work. The first real attempt to organize the study of foreign languages under government patronage was by H'totsushi, the last Shiogun of Japan. A school was begun in the same location as the present school.

Two teachers, one English and one French, were employed. Each had about fifteen pupils, who learned to speak, read, and write the language; and about an equal number who learned to read and translate only. The name of the school

pointed chief director. The school was now named Dai Gaku Nan Ko. (Great Learning, South Branch.)

During all this time, and for several years before, there had been living at Nagasaki, doing the quiet work of a missionary teacher, a man who, perhaps, has been more potent for good, and has wielded more influence with the men who have led the reforms of Japan, than any other one foreigner in Japan. His name was Guido F. Verbeck, a missionary of the Reformed Church in America. He was born in Holland, lived in the United States, and is a graduate of Auburn Seminary, New York. He has been in Japan eleven years, and is now forty-two years old. He is a man of a temperament especially fitted to succeed with the Japanese. He has the vigor of a Yankee with the stolidity of a Dutchman. He is a thorough American in feelings, opinions, and action. He speaks five languages with ease and grace, and hence does not need to torture his soul with those necessary vexations, interpreters. Mr. Verbeck was called to take charge of the Yedo school. When he came to Yedo, about forty of his Nagasaki pupils came with him. His coming infused fresh life and vigor into the school. The number of pupils multiplied, a German department was added and more foreign teachers were added from time to time.

We use the word "teacher" in a highly complimentary sense. Trained instructors, who magnify their calling, were not abroad in the land of Japan three years ago. The unsophisticated Japanese could not discern between a fair teacher and a bar-tender at first sight. That a man could speak such a difficult language as the English easily and fluently seemed to them sufficient reason why he should be set to teach it. For about two years the school, with some shining exceptions, was supplied mostly by graduates of the mines, the gin-mill, the camp, the marine, or the dry-goods shop, in which such onerous duties as politeness and industry were required. The contracts made with the teachers were from three to six months long, and occasionally a teacher was sufficiently decent or not too lazy to be reappointed. The "Faculty" of the Yedo College became the standing joke of Japan. Finally the Japanese yielded to the suggestions of Mr. Verbeck, and sent abroad to Europe and America for trained professional teachers, on contracts of three years each. The school has now a fair staff of professors and teachers.

In September, 1871, the school numbered 1,100 pupils, with seventeen foreign instructors and about sixty native teachers and interpreters. The school was divided into two departments. The "meaning school" or translation department consisted of about 400 pupils, who learned to read and translate only, and who did not speak or write the foreign languages. The corps of translators attached to the school translated the "Code Napoleon," "Wayland's Moral Science," a "Dictionary of Agriculture," "Parley's Universal History," several treatises on "Political Economy," and an innumerable

array of small readers and text-books. The other department of the school consisted of 700 pupils, who learned by speaking, writing, and reading the elementary branches of a modern foreign education. All the pupils at this time were divided into morning and afternoon scholars—that is, one-half attended school in the morning, and the other half in the afternoon. Over one-half of all the pupils boarded in the school buildings; but no rules of discipline were made or enforced, and where they spent their nights or spare hours was no concern of any one but themselves.

The present minister of education, Doki, a very energetic and resolute man, on coming into office, decided upon a radical change in the whole department of education, but especially in the College. To cleanse this Japanese Augea, our Hercules closed the school for weeks, and, with Mr. Verbeck, planned anew. The meaning school was abolished; the number of scholars, by a rigorous system of weeding, mental and physical examination, was reduced to 430. Four trained teachers from America and two from Paris were secured. The students were to attend school five hours each day. All the boarders were placed under officers of discipline. None were allowed out after night; they were to retire at ten, and to get up at six. Their diet, habits, etc., were to be carefully looked after; a hospital, convalescent room, and dispensary, with a permanent physician, were attached to the College. The course of studies, etc., was modeled so as to be more like a foreign school than before, and physics, chemistry, and the higher mathematics were introduced.

The ideal curriculum of the college comprises a period of seven years. The pupil starts from a good basis of Japanese, and is expected to master the foreign language which he studies so as to be able to read, write, and speak it with ease and precision. He is to attain such a proficiency in the elementary studies that he can enter at once into a first-class scientific school or college in America or Europe. We see no reason why, in a few years more, the Yedo College should not be equal in grade to the average American college. Most of the students will become officers of the government, many will go to America or Europe to study or travel, and some will enter the higher special schools of science to be established in Japan.

Of the 500 pupils now in the college, there are about eight classes with about 250 pupils in the English department, four classes and 150 pupils in the German, four classes and 125 pupils in the French. In the three lower classes of the English pupils the daily drill is in spelling, reading, writing, dictation, parsing, speaking, and translating English. In the fourth class grammar, geography, and arithmetic are introduced. In the three higher classes the professors use no interpreters. Each of the lower classes is taught by the same teacher for at least six months. The three higher classes are under the joint charge of three professors. In these, arithme-

tic, ancient and modern history, algebra, geometry, physiology, chemistry and physics, and the theoretical formation of the English language are taught ; most of the previously mentioned studies being continued, especially the constant drill in conversation, grammar, and original composition, and translation from Japanese into English.

The staff of professors and teachers in the English department is as follows : Rev. C. Verbeck, president of the college ; Prof. Wm. E. Griffis, Chemistry and the Theory of the English Language ; Prof. P. V. Veeder, Mathematics and Physics ; E. E. House, History, Rhetoric, and Grammar. These three gentlemen teach the three higher classes. The other classes are taught by Messrs. M. M. Scott, Horace Wilson, G. Whymark, T. Major, J. W. Hall. San Francisco is well represented. Professor Veeder was at the head of the City College ; Mr. M. M. Scott was principal of the High School ; and Mr. Horace Wilson, a professional teacher, is from that city. E. E. H., are the well-known initials of the *Tribune's* accurate Japan correspondent and the occasional writer in the *Atlantic and Harper's*. That his labors are not in vain is proved by the fact that the English compositions of the first class are marvels of graceful and precise expression.

It may be seen that the ologies and other distractions are kept out of sight till the language is fairly mastered. The same principles of instruction are carried out in the French and German Schools. In the contracts made with the instructors nothing whatever is said concerning religion. The Bible is not allowed to be taught in the school ; but religious topics are not forbidden or restricted. Full liberty is allowed in their discussion, and questions are freely asked and answered. The pupils frequently manifest a desire to know fully concerning religious subjects. Their favorite studies are history, chemistry, physics, moral philosophy, political economy, and geography. They are bright, eager, and industrious. The perpetual wonder to an American teacher is that no discipline is needed in the class-room. They seem almost incapable of an indecorum. We should feel quite relieved if they would kick over a bench occasionally, or put chalk rags in our hat, as all normal school boys do ; but they don't. Yet they are not dull. They like fun and enjoy a joke. If they are mentally inferior to American students of the same age, the writer, after five years' experience teaching them, is unable to see it.

In thinking of the Yedo College, one must banish all architectural ideas derived from Oxford or New Haven. The buildings are in a large area, surrounded by a high fence, painted in the Japanese official color—black. Entering the main gate, we find a space of half an acre or so tastefully laid out in parterres and planted with evergreen trees and flowers. Americo-Japanese composite is the style in vogue. Paint, glass windows, hinged doors, etc., have transformed a once Daimio's

mansion into something like buildings in wooden style. The director, secretary, and librarian's rooms are on the right as one enters ; and to the left branch off the long parallel rows of study-rooms. Each room is about 20 feet square, and the pupils, whose school hours are from 9 A. M., to 12 M., and from 1:30 to 3:30 P. M., sit on benches with desks before them. The usual school furniture, maps, globes, charts, chemical and physical apparatus in their places complete the academical appearance of rooms otherwise exceedingly plain. The dormitories, study and eating-rooms, hospital, etc.—all long one-storied structures—are beyond the school proper, but connected to the latter by passages. About 400 of the students board and live in these houses, all their expenses being paid by the central or local governments, and they themselves being subject to the rules of discipline prescribed by the directors. These rules are very rigid, the pupils being allowed only two hours' absence to walk out, etc., except on Sunday, when they have the entire day.

The pupils are drawn from the best classes of society in Japan, and will in the future wield an incalculable influence in that country. About three-fifths of the present government officers have more or less knowledge of foreign letters or science, and the demand for men educated in modern ideas is urgent and constant.

Of the large number of private schools in which the chief European languages are taught—the Girls' English School, under Mrs. Veeder's charge, the Medical School, etc.—we may write again. The corner-stone of Japan's civilization in the words of her own son before our country's Chief, is, "education is the basis of all progress."

Yedo, Japan, April 20th 1872.

Independent.

JOTTINGS IN YEDO.

An exhibition of curiosities in nature and art has been opened this week in Yedo, which really marks an era in the educational development of this people. Among the numerous temples and shrines, in Yedo, dedicated to the purposes of the many sects in Japan, there is one very handsome temple sacred to the spirit of Confucius. It is situated in the beautiful grounds of the old Chinese College. This college was the chief seat in Japan of the study of the science and literature of China, to which Japan owes so much of her culture, her civilization, and her superstition. The study of Chinese is now falling into desuetude, and the college has been closed for years. Formerly none but the highest scholars, or men of rank could enter this temple ; but during this week crowds of common human beings pass its portals and see the curious things collected there, by paying a cash value of two cents.

The exhibition was projected by a few enterprising Japanese literary men, and though small compared with the collections of some towns of Europe or America, is

very good, and well selected, considering that it is the first enterprise of the kind in Japan. The specimens exhibited are those in the fauna and flora of Japan. Ichthyology, herpetology, and entomology are the best represented. About 100 birds, representing the ornithology of Japan, are well stuffed and mounted. A number of mastodon and elephant's bones, evidently from Siberia, are in the collection. The wealth of the timber of the empire is well illustrated by the polished slabs exhibited. In looking at the cases of insects, one wonders whether there can be a country so rich in its variety of beetles. The cases of cryptogamous plants were also remarkably well filled; the specimens in this, and in all the departments, being mounted with exquisite nicety.

The Japanese department was the most interesting to a casual foreigner. The articles of lacquer and bronze were mostly of the old, rare, and costly patterns. Arms and armor, ancient dresses, musical instruments, manuscripts, pictures, carvings, etc., were neatly arranged, and well illustrated the history, and changes in Japan. Among the large number of coins, were the old oblong sheets of gold six inches long and four wide, and the gold rujo—a massive sheet of pure gold, which before the opening of the country was worth one dollar, but which cannot now be bought for six.

Besides the many old curios, there was an immense fish about 10 feet high or long, and two feet wide and thick. It seems just ready to swallow some Jonah, or is trying to stand on its neck. It is made of a copper shell covered with plates or scales of pure gold. It has long been one of the wonders of Japan, and is now on public exhibition in Yedo for the first time. It is exceedingly difficult to judge of the weight or value of the gold on it, but it must be many thousands of dollars.

Gold fish apart, however, the fact of an exhibition of things, which are of interest mostly in a scientific point of view, is an event in Japan that speaks well for the present, and promises better for the future. His High Grand and Mighty Mysteriousness, the Mikado, is to visit the college in a few days. Of course the students are practicing to speak their pieces well; while he who worketh in the chemicals is especially entreated not to let anything explode near his sacred face. It is a good thing for young Japan and the Mikado himself. He is beginning to think that the mystery play has been kept up long enough already.

CURIO.

Yedo, April 22, 1872.

THE INSECT WAX OF CHINA.—The *Scientific American* quotes the following account of the production of Chinese wax from Dr. D. J. Macgowan's interesting work. Chemical investigation has proved the wax to be a cerotate of ceryl.

In China, prior to the thirteenth century, beeswax was

employed as a coating for candles; but about that period the white-wax insect was discovered, since which time that article has been wholly superseded by the more costly but incomparably superior product of this insect. The animal feeds on an evergreen shrub or tree (*Ligustrum Unidum*) which is found throughout Central China, from the Pacific to Thibet.

Sometimes the husbandman finds a tree which the insects themselves have reached, but the usual practice is to stock them, which is effected in spring with the nests of the insect. These are about the size of a fowl's head, and are removed by cutting off a portion of the branch by which they are attached, leaving an inch each side of the nest. The sticks with the adhering nests are soaked in unhusked rice water for a quarter of an hour, when they may be separated. When the weather is damp or cool, they may be preserved for a week; but if warm, they are to be tied to the branches of the tree to be stocked without delay, being first folded between leaves. By some, the nests are probed out of their seats in the bark of the tree without removing the branches. At this period they are particularly exposed to the attacks of birds, and require watching.

In a few days after being tied to the tree, the nests swell, and innumerable white insects the size of nits emerge and spread themselves on the branches of the tree, but soon with one accord descend towards the ground, where, if they find any grass, they take up their quarters. To prevent this, the ground beneath it is kept bare, care being taken also that their implacable enemies, the ants, have no access to the tree. Finding no congenial resting place below, they reascend and fix themselves to the lower surface of the leaves, where they remain several days, when they repair to the branches, perforating the bark to feed on the fluid within. From nits, they attain the size of lice; and having compared it to this, the most familiar to them of all insects, our Chinese authors deem further description superfluous. Early in June, they give to the trees the appearance of hoar frost, being changed into wax. Soon after this, they are scraped off, being previously sprinkled with water. If the gathering be deferred till August, they adhere too firmly to be easily removed. Those which are suffered to remain to stock trees the ensuing year secrete a purplish envelope about the last of August, which at first is no larger than a grain of rice; but, as incubation proceeds, it expands and becomes as large as a fowl's head, when the nests are transferred, in Spring, to other trees, one or more of each, according to their size and vigor, in the manner already described. In being scraped from the trees, the crude material is freed from its impurities, probably the skeletons of the insects, by spreading it on a strainer, covering a cylindrical vessel, which is placed in a cauldron of boiling water; the wax is retained in the former vessel, and, on congealing, is ready for market. The *pel-lah* or white wax, in its chemical properties, is ana-

f
s
n
i
f
i
s
p
T
su
di
ta
w
fo
be
th
wh
sa
pe
na
inc
am
be
per
as
22
of
400

V
furn
ther
ing
wor
pulp
ciple
the
caps
agita
as a
surre
a soa
call
by th

Th
alis f
and i
bark
the s
dyers
Belgi
soap

logous to purified beeswax and also spermaceti, but differing from both, being in my opinion an article perfectly *sui generis*. It is perfectly white, translucent, shining, not unctuous to the touch, inodorous, insipid, crumbles into a dry, inadhesive powder between the teeth, with a fibrous texture resembling felspar; melts at 100° Fahr.; insoluble in water; dissolves in essential oils, and is scarcely affected by boiling alcohol, the acids or alkalies.

The aid of analytical chemistry is needed for the proper elucidation of this most beautiful material. There can be no doubt it would prove altogether superior in the arts to purified beeswax. On extraordinary occasions, the Chinese employ it for candles and tapers. It has been supposed to be identical with the white wax of Madras; but as the Indian has been found useless in the manufacture of candles, it cannot be the same. It far excels, also, the vegetable wax of the United States from the (*Myrica Cerifera*).

Is this substance a secretion? There are Chinese who regard it as such—some representing it to be the saliva and others as the excrement of the insect. European writers take nearly the same view; but the best native authorities expressly say that this opinion is incorrect, and that the animal is changed into wax. I am inclined to think that the insect undergoes what may be styled ceraceous degeneration, its whole body being permeated by the peculiar product, in the same manner as the *coccus cacti* is by carmine. It costs at Ningpo from 22 cents to 35 cents per pound. The annual product of this humble creature in China cannot be far from 400,000 pounds, worth more than \$100,000.

VEGETABLE SOAP.—Many plants in different countries furnish useful substitutes for soap to the natives, when there are no conveniences or materials for manufacturing ordinary soap. Examples of these are the soap-worts, (*Sapindus*), so called from furnishing either in the pulp of the fruit or in the root or bark, a vegetable principle called saponine. Thus the Hindus use the pulp of the fruit of *Sapindus detergens* for washing linen. The capsule of another species, when bruised, forms suds if agitated in hot water; and the natives of India use this as a soap for washing the hair, silk, etc. The aril which surrounds the seed of a South American species is used as a soap. The fresh bark of the root of *Mounina polystachia*, called "yalhoi," pounded and moulded into balls, is used by the Peruvians in place of soap.

The bruised leaves of the European *Saponaria officinalis* form a lather which much resembles that of soap, and is similarly used in removing grease spots. The bark of *Quillaia saponaria* of Central America answers the same purpose, and is used as a detergent by wood-dyers. It has even been imported largely into France, Belgium, etc., and sold in the shops as a substitute for soap. A vegetable soap was prepared some years ago

in Jamaica from the leaves of the American aloe, which was found as detergent as castile soap for washing linen, and had the superior quality of mixing and forming a lather with salt water as well as fresh.

In Peru, the leaves of the *Maguey agave* are used instead of soap. The clothes are wetted, and then beaten with a leaf which has been crushed; a thick, white froth is produced, and after rinsing, the clothes are quite clean. The pulpy matter contained in the hard kernel of a tree called "*Del Joboncillo*," is also used for the same purpose. On being mixed with water, it produces a white froth. In Brazil, soap is made from the ashes of the bassena or broom-plant, (*Sida lanceolata*), which abounds with alkali. There are also some barks and pods of the native plants used for soaps in China.

The soap-plant of California (*Phalangium pomeridium*) is a notable example of this class of vegetable productions, and is found exceedingly useful. The bulbous root, which is the saponaceous portion, resembles the onion, but possesses the quality of cleansing linen equal to any olive soap manufactured. Large amounts of washing fluids are made from this root at the Standard Soap Works in this city (San Francisco).

This soap-plant grows all over California. The leaves make their appearance about the middle of November or about six weeks after the rainy season has fairly set in. The plants never grow more than a foot high, and the leaves and stalk drop entirely off in May, though the bulbs remain in the ground all summer without decaying. It is used to wash with in all parts of the country, and by those who know its virtues it is preferred to the best of soap.

The method of using it in its natural state is merely to strip off the husk, dip the clothes into the water, and rub the bulb on them as with soap. It makes a thick lather, and smells not unlike brown soap.

The husks are also utilized in large quantities, by being worked up into an imitation of hair for mattresses, for which purpose they are found to be a very good substitute.

At St. Nicholas, one of the Cape de Verde Islands, they make a soap from the oil of the *Jatropha curcas* seeds, and the ashes of the pawpaw tree leaf. The oil and ashes are mixed in an iron pot, heated over a fire, and stirred until properly blended. When cool, it is rolled up into balls, about the size of a six-pound shot looking much like our mottled soap, and producing a very good lather.—*Scientific Press*.

A scientific survey is about to be made by officers of the Imperial Geographical Society of St. Petersburg, of Siberia. The work is to begin in June, and is expected to be completed in the course of two years. Two surveys will be made simultaneously by different commissions, to check one another.

THE CONN. SCHOOL JOURNAL.

NEW HAVEN, JULY, 1872.

EDITORIAL.

In our last issue we endeavored to show that the modern light gymnastic movements are not to be neglected in our schools. We would now take occasion to recommend to our teachers generally, to visit sometimes those institutions where these exercises are made a specialty, and where they can be seen in their highest and most careful development. Of course those to whom Boston is convenient, can avail themselves of Dio Lewis' establishment; a trip to Vassar College at Poughkeepsie, now brought very near to Connecticut by the Western Railroad, especially if taken during Commencement week, would afford a treat; for in addition to the numberless other enjoyable and most remarkable features of that great training-school, the department of light gymnastics under the charge of a lady—one of Dio Lewis' pupils, is very prominent and successful.

But of all the gymnastic schools which we have attended, we remember with the most pleasure, and commend most heartily to those desirous of expanding their ideas in this direction, Burnham's Academy of Physical Culture, at the corner of Schermerhorn and Smith Streets, Brooklyn, N. Y. We visited it twice recently, once when the young men were exercising, and once when the wands were wielded by the fairer sex. Besides witnessing the performances, we examined the great building in every part, under the guidance of its very courteous director, Mr. Avon C. Burnham, and came to the conclusion that it would be very hard to find another building so complete and elegant in its arrangements—so full of the most ingenious contrivances for gentle and entertaining muscular motion—or a director more skilled in developing its resources. The building was erected by a number of gentlemen, resident in Brooklyn, at the cost of seventy thousand dollars. The upper part is occupied by the gymnasium with its attendant offices and dressing rooms. The lower part, by some excellent Turkish and Russian baths, by bowling alleys, and by a very thorough establishment for the application of the famous Swedish movement cure. Dr. George H. Taylor, a very capable physician, has the charge of this last department. He entertained us very much by his instructive discussion of certain important sanitary matters, while he was rap-

idly subjecting a patient to a series of continuous "digs" and punches in the vicinity of the stomach (not to be too particular just here), which, if the law of association is good for anything, ought to make the man dream of earthquakes for the next month. Then we were introduced to a "steam vibratory apparatus," which is an invention of Dr. Taylor's, and of all the quivering and shaking and quaking things in this world it is the most remarkable. It leaves the shaking powers of the fever and ague quite out of sight. We saw a gentleman seated before this machine whose foot was adjusted by the Doctor to an iron shoe, projected in front of him. The valve was opened, and that foot traveled a good many miles, we should think, in the next few minutes. We hold these movements in much respect, for we believe that one of our dearest friends was cured by them from a disease apparently incurable.

But to return to the gymnasium. The hall is one hundred feet long, by seventy-five broad, with a gallery for spectators. It abounds in apparatus of curious forms and uses. The walls are lined with rows of dumb-bells, wands, hand-rings, Indian clubs, and bar bells, while a maze of ladders over head, high up under the lofty roof, guarded by continuous festoons of network of rope, make the very atmosphere seem redolent with exercise.

There are public exhibitions of the performances of the young men, two or three afternoons in the week, and also of the young ladies, to which few, except their lady friends, can be admitted.

It would be hard to describe with any fitness, the exceedingly interesting, graceful, strengthening movements which we witnessed. From those which were performed without any instruments, or with dumb-bells and rings, our teachers might get many hints as to the kind of exercise to be introduced into our common schools. We thought the most graceful of the movements were those of the young ladies, with the wooden guns. We do not know where Mr. Burnham acquired his gifts as an athlete, and a teacher of gymnastics, but that he has them in full strength, is evident. Whether he is himself practising on the more difficult forms of apparatus, or conducting his classes in their graceful combinations of movements and attitudes, he is equally successful.

The following description of some of the exercises at this institution from the *Hearth and Home*, attributed to the gifted pen of Rev. Edward Eggleston, cannot fail to interest our readers. We select a passage, referring to the performances of a class of young ladies:

"No dress parade of soldiers can equal this sight. Nearly a hundred girls, under fourteen years of age, dressed in short skirts and trousers, treading gracefully on the instant, a hundred white stockings moving on one side and another hundred on the other, as if the whole class were actuated by a single will! There are no smiles on these faces—all is attention, drill, subordination. As a part of mental education, this drill is beyond price. For instance, Faery, who is hardly ever still, or steady, is now in dead earnest. She is one of the best scholars, and has her reputation to maintain. So she looks neither to the right nor the left, but just keeps her eyes to the front, and her mind on her business. Almost no commands are given. The girls have marched into their places, and are swinging their clubs in all sorts of circles or on all sorts of planes, first with the right, then with the left hand, in the beat of the music, but without a word from the teacher. It is like a piece of music, played from memory. The feat of memory and attention is quite as remarkable as the physical skill and grace of the execution. At a word, the clubs are stood on end in front of the girls, and then 'postures' ensue. You laugh, you cannot but laugh at seeing all sorts of dramatic postures, and every facial expression known to Mr. MacKaye or Delsarte appear in succession, and simultaneously, on the faces of these young girls. Here, too, there is no prompting, but the music suggests the order of the exercises. A hundred girls are tragically surprised at the same moment, now staring curiously at the floor, now with uplifted hands looking to the skies."

There is much more of this sprightly description; we have seen it all and know that it is faithfully sketched. Teachers who might find a convenient occasion for visiting this gymnastic school, would doubtless be made to feel perfectly at home by the courtesy of Mr. Burnham; and they could hardly fail to catch some useful ideas in regard to the judicious use of physical training in their schools.

We published last month another article in regard to the enumeration of the children in attendance upon our public schools, by Mr. D. P. Corbin, who thinks that the subject was not left in a satisfactory shape by the two articles in the April number. Mr. Corbin takes us to task somewhat for one or two of our statements, in an editorial in that number, alluding to this discussion, and we will most cheer-

fully put the matter in its right light, by saying that the objection raised by Mr. Corbin is not to the method of estimating average attendance, as there stated, but to errors in the computation made of the total attendance of children at our schools and the per centages based upon that computation. He also claims that there is no practical value in such a computation even if correctly made. He holds that our state laws give our Secretary of the Board of Education all the power needed to compel as accurate an enumeration as might be desirable. In arranging to have an official view of the matter on the points involved, presented to our readers in the same number with the article which introduced the subject, we intended, simply as a matter of editorial thrift, to do what would conduce to the interest of the discussion. We state this plainly because we find that our motives have been misconstrued. This explanation, which belongs properly to the last number of the JOURNAL, has been delayed till this one by the pressure of other matter in our columns.

The *Indiana School Journal* suggests the propriety of a meeting of editors of educational journals, at the next Convention of the National Educational Association at Boston in August. It requests all editors in favor of the proposition to say aye. In response to which, we say aye, with all our heart. We are all working in the same noble cause; we are probably quite in harmony in our general, and even, in the main, in our special views, on the great subject of education, and such an extempore gathering ought to prove both a genial and a profitable occasion. It would not be strange if some concert of action might be then and there devised in respect to our future labors, which should strengthen and elevate the whole educational press.

ANNALS OF EDUCATION.

WOODSTOCK.

The closing examination of the Woodstock Academy, was held on Friday, June 21st, followed by an interesting literary entertainment in the evening. The exercises on both occasions seem to have passed off very creditably. Of the examination, the Windham County Transcript says:

Visitors were invited to make selections from the

ground gone over, to test the thoroughness of the instruction, and the most rigid questioning was also invited, and the invitations were, to a considerable extent, complied with, and resulted very satisfactorily. We have not space to notice particularly the recitations that we heard, but we wish to express the conviction that the languages and mathematics are as thoroughly taught in this institution as in any other of a similar character. If we say better than in most we express the conviction of many. The few who have been fitted for college here will start and stand well in that institution.

The Academy Hall was far too small to accommodate pupils and visitors on this occasion, and the click of the drill but a short distance off, preparing the foundation for a commodious building, was music to the friends of the institution. It is hoped that this fine structure will be ready for occupation in the winter term. By invitation of the chairman of the trustees, Mr. Abel Child, brief addresses were made by some twelve or fifteen of the trustees, and others, concerning the institution.

The success of these exercises and of the whole year's work at the academy, is due to the excellent care and labors of the new principal, Mr. M. E. Davidson, and his assistant, Miss Beach. Mr. Davidson has secured the services of Miss Emily A. Clemons, a member of the Normal School, as assistant teacher for the next term. Knowing well her capacities as a teacher, we deem this a very fortunate selection.

CHESHIRE.

The seventy-eighth anniversary of the Episcopal Academy of Connecticut, at Cheshire, took place on Thursday, June 27. Essays were read, and declamations delivered, twelve in all, interspersed with music, and followed by the honorary oration by C. C. Williams, B.A.

FARMINGTON.

A "Matinee of Chamber Music" was given at Miss Porter's Young Ladies' School at Farmington, on June 25th. This is the sixtieth concert of the kind given at this school. The eminent artists, Mills, Thomas and Bergner delighted the appreciative audience by a choice selection of music exquisitely rendered. This school is of course in a most flourishing condition. It always is. The pupils number from seventy to eighty, varying somewhat with the season. There will be no exercises of public interest at the close of this school-year, which occurs early in July. On being released from school duties, Miss Porter proposes to start at once for a tour in Europe, where from present appearances she will find herself in company with many other New England teachers.

BOOK NOTICES.

THE NEW AMERICAN PRONOUNCING SPELLER.*—An examination of this book has proved satisfactory. The structure of a spelling book is by no means to be regarded as of little consequence, because the study itself is so elementary. There is occasion for much tact, if not genius, in producing even so simple a work in a shape worthy of this progressive age. Simply sifting apart the words into groups containing those of equal length, and telling these off into columns, very much as "coal-breakers" sort the coals of Pennsylvania, does not meet the case. On the other hand, the cramming of spelling books with synonyms, definitions, and other extraneous matter is a sad mistake.

There is a directness and simplicity of aim in the present book which make it a valuable addition to our elementary manuals. The words are chiefly grouped with reference to particular topics, thus enabling a teacher, by using a little tact, to make the exercise more interesting than is possible when the attention of the class is dissipated by words referring to a promiscuous variety of subjects.

A collection of such words of common use as are more frequently mis-spelled, and a miscellaneous list for *test spelling* are accessories of the book which will be found useful.

* *The New Pronouncing Speller.* Published by E. H. Butler & Co., Philadelphia.

THE UNITED STATES READER.*—As far as we are aware, this book has no predecessor nor rival in its somewhat peculiar sphere. It aims at once to teach history and reading, and we confess to having been somewhat puzzled, after having perused only the preface, to decide whether it was really to be regarded as more of a reader, or more of a history.

We entered therefore upon our examination of the contents with something of the feeling of one trying to be seated on two stools somewhat wide apart. This feeling was however entirely dissipated, to be followed by an appreciation of the author's purpose, as we made acquaintance with the details of the work.

We feel prepared to commend the plan of this manual, which may be stated as follows: it is a *Reader* in its chief function. But, as an essential element in good reading is a thorough comprehension,

* *The United States Reader.* By John J. Anderson, A.M. Published by Clark & Maynard, New York City.

hension of the subject-matter, and a familiarity with the subjects thus acquired would be likely to make a permanent impression, a consecutive history of our country is made the basis of the exercises.

Commencing with the discovery of America, the chief topics of our history are brought forward in regular chronological order, and made impressive to the student in this way. First comes the text of the history as related to the topic in question, prepared by the author; this is in smaller type than the accompanying selections, that it may be the more distinctly separated from them, and is generally concise and judiciously compiled. Following this historical text, we find in each case an apt selection of extracts from the works of the best writers in our language, touching upon prominent points of the history, describing, enforcing, illustrating or embellishing them; and certainly thus presenting them in the most inspiring and memorable way. Thus in close connection with the brief sketches of the opening events of the Revolution, we have Col. Barre's spirited speech in behalf of the Colonies. Hawthorne on the Boston Massacre, Maxcy on the First American Congress, O. W. Holmes on the Battle of Lexington, Ethan Allen's own account of his Capture of Ticonderoga, Sparks' account of the Appointment of Washington, John Pierpont's "Warren's Address," and Parton on Montgomery's Attack on Quebec.

In connection with some of the events of our late war, we find such stirring articles as an extract from Lincoln's Inaugural Address in 1861, "Bethel" by A. J. H. Duganne, "The Merrimac and the Monitor," by Estvan, "The Last Broadside," by Elizabeth T. P. Beach, "Barbara Frietchie," by Whittier, the "History of our Flag," by Rev. A. P. Putnam, and those imperishable words of Lincoln at the dedication of the National Cemetery at Gettysburg.

It is quite interesting to note what a number of gems in literature cluster around each topic of our history; it certainly is inspiring to connect thus the events, many of them thrilling enough in themselves, with the sparkling thoughts which they have called forth from our most brilliant minds. We think it would be acceptable to have this plan carried out on a larger and more studied scale as a work of literary art.

In the present treatise selections from seventy-nine of our leading writers are given. Doubtless the number might be greatly increased with as complete appropriateness to the subject, should there be occasion for such increase.

We believe that by the use of this book the student will both derive immediate benefit, and also, if possessed of any true spirit of culture, will realize the author's intention of being inspired to seek for himself a more extended acquaintance with the works of the gifted writers, to whose masterpieces he is here introduced.

MUSIC AND MORALS.*—We could count on our fingers, and hardly make their circuit twice, the years that have passed since the choicer excellencies of music were totally unappreciated by our people. It is within comparatively recent times that under the combined influences of intense patriotism and of rude pioneer life, Yankee Doodle and Hail Columbia were allowed to stand before our youth as the models of musical inspiration, while the whole communities of our land, even in our cities, had their musical capacity filled brimful, with the jingling melodies of waltzes and polkas. Musicians coming to us from the older and better developed communities of Europe were amazed at the musical simplicity of our people and almost crazed by the utter indifference with which all their renderings of pieces of any artistic value were met.

Well do we remember the disgust with which one eminent musician once described to us his early experiences of this kind. Prof. Phillip Ernst of New York City, eminent as flute and guitar player and instructor, court flutist in Paris in the days of Charles X and of Louis Philippe, after the expulsion of the royalists from France, came to our land, to carry on his profession. Exceedingly nice in his musical sensibilities, and choice in his selections, he was careful, at the first reception given him at New York City, to bring forward pieces which would have been at once recognized in Europe as of the highest order of excellence. After seeking for some time, against evident difficulties on their part, to entertain his audience in this way, he was already beginning to have a sinking at heart at the lack of hearty appreciation, when the feather gently descended which broke the camel's back. One of the most prominent of the ladies present, in company with several others, fluttered up to him smilingly, and said, "You play very nicely Mr. Ernst, but can you not play us some livelier pieces, some waltz or polka?" "No, Madam!" answered the maestro, with hauteur, amazed at her asking a musician of his standing to do what at home was always left to the commoner sort of players.

It was the lady's turn to be amazed; "What! you play so *very* well, and do not know a waltz?" "I know a hundred waltzes, but I cannot spare the time to play one," answered the dismayed musician, as he packed up his instrument and made an early start for home, ruminating on the grossness of the people's tastes, and the expediency of taking the next vessel for Europe.

* *Music and Morals.* By the Rev. H. R. Haweis, M.A. New York: Published by Harper & Brothers,

Times have changed much for the better since then. The germs of correct musical taste have taken root all over our soil and are fast growing up into goodly proportions. The best of Europe's musicians can now produce here in many places their choicest selections with public approval, our popular songs are tending towards higher types, our colleges are instituting professorships of music, singing is being introduced into our public schools, and many other straws are floating in the right direction.

Yet a great work remains to be done. The people must be far more thoroughly educated into the knowledge of the true character, power, and sphere of music. For this reason we hail this admirable book from the pen of Mr. Haweis. It is addressed not directly to professional musicians, but to the public, and it tells much that the public need to know. Many have failed utterly to realize that there is a moral side to musical utterances. Here its moral influences are thoroughly analyzed, and set forth in a very sprightly and attractive manner. This book has already touched a responsive chord in the minds of many. It has its beneficent mission and it will have a chance to perform it effectually, for that it is to become very popular, there can be no doubt. All who have any concern for their aesthetic culture should read it. Teachers, one and all, should make study of it. Any teacher who cares not for these matters of aesthetic culture, is decidedly below the highest standard of his profession. If we were to draw up a catalogue of needful works for a teacher's library this should certainly be one.

The book consists of four parts. The first treats of the Philosophical in music, of its connection with emotion and morals; this is the most needful and weighty part of the work, yet the subject is developed in so sprightly a manner, that the reader is borne along inevitably to its end, if he once gets into the current.

The second part is Biographical, the third, Instrumental, the four this a criticism of English music. All of these are at once instructive and entertaining. This treatise is issued in a very neat style and in good clear type. Teachers that can afford to add it to their libraries, will find themselves benefited by so doing. We append the following extract in illustration of the style of the author:

"In some of the Gothic cathedrals we may have noticed strange figures hiding in nooks and corners, or obtrusively claiming attention as water-spouts. Some of them are revolting enough, but they are not to be severed from their connection with the whole building. That is the work of art; these are but the details, and only some of the details. How many statues are there in all those niches?—let us say a thousand. You shall find seventy pure virgins praying in long robes, and forty monks and apostles, and bishops, and angels, in choirs, and archangels standing high and alone upon lofty facade, and pinnacle and tower; and round the

corner of the roof shall be two devils prowling, or a hideous looking villain in great pain, or (as in Chester Cathedral) there may be a proportion—a very small proportion—of obscene figures, hard, and true, and pitiless. 'What scandalous subjects for church decoration!' some may exclaim: yet the whole impression produced is a profoundly moral one. The sculptor has given you the life he saw; but he has given it from a really high stand-point; and all is moral, because all is in healthy proportion. There is a degradation, but there is also divine beauty; there is passionate and despairing sin, but there is also calmness and victory; there are devils, but they are infinitely outnumbered by angels: there lurks the blur of human depravity, but as we pass out beneath groups of long-robed saints in prayer, the thought of sin fades out before a dream of divine purity and peace. We can see what the artist loved and what he taught; that is the right test and we may take any man's work as a whole, and apply that test fearlessly. If we would know whether a work of art is moral or not, let us ask such questions as these: Does the artist show that his sympathies lie with an unwholesome preponderance of horrible, degraded, or of simply pleasurable, as distinct from healthy emotions? Is he for whipping the jaded senses to their work, or merely for rejoicing in the highest activity of their healthful exercise? Does he love what is good, while acknowledging the existence of evil, or does he delight in what is evil, and entirely introduce what is good for the vicious sake of trampling upon it?"

WORD BOOK OF ENGLISH SPELLING.*—Those who have used Prof. Swinton's "Word-Analysis" will be quite prepared to find this new work a valuable one. It is a small and very convenient hand book adapted to ungraded schools and to the lower classes in Grammar Schools. Its author says of it that it is "neither a 'Training Speller,' nor a Dictionary. It omits the 'ab ab's' on the one hand, and on the other quite a number of sesqui gradalian words common to all old-time spelling-books." Some of the advantages claimed are a more careful, particular, and useful division of the matter into daily lessons, including stated reviews, a careful arrangement of a portion of the book with reference to vowel sounds, as an aid to correct pronunciation, a judicious classification of words with reference to leading ideas, with reference to the auxiliary influence of the association of ideas, some instruction upon certain French and Latin phrases in common use, the introduction of a simple method of word-analysis, and the practical character of the whole work in setting forth the more common and useful terms of a vocabulary.

Some of these features are by no means so moral or peculiar to this work as its preface would seem to claim; for a great advance has lately been made in spelling-

* *Word Book of English Spelling, Oral and Written.* By William Swinton, A.M. Published by Ivison, Blakeman, Taylor & Co., New York and Chicago.

books. It may also be remarked that the slur cast in the same preface on the lists of "long-tailed words in 'osity' and 'ation'" contained in many other spelling-books is uncalled for and somewhat thoughtless. Why, one would think from this expression of Prof. Swinton that our poor spelling-books were responsible for the manufacture of these long words, instead of simply teaching children what they find in common use. Does Prof. Swinton mean to imply that they are not in common use? Does he never have occasion to teach his pupils the obligation of generosity, or a detestation of pomposity? If he does, would it not be well enough for those pupils to know how to spell these indispensable words in making notes of his advice? As a collection of many of the more common words of our vocabulary arranged in an exceedingly instructive and judicious way, this book will prove valuable to those teachers who may adopt it.

THE FIFTH AND SIXTH READERS.*—A reader which carries the name "Monroe" on its back is bound to be popular. We might therefore seem to do all that is needed, in announcing the advent of these books, and their distinguished authorship. Yet as even Jupiter sometimes nods, and great men have been known to emit very stupid books, some testimony in regard to the actual contents may not be superfluous. The Fifth Reader consists mainly of short and "telling" articles, well adapted to pupils of a certain age, who need something spicy, but not too abstruse nor too long. The well-chosen reading matter is preceded by twenty-two pages of instruction in Physical and Vocal Training. The Position and Carriage of the Body, Development of the Chest, Right use of the Voice, Articulation, and various kindred topics are touched upon briefly but very sufficiently for the purpose, and very clearly. Those who are acquainted with Prof. Monroe's system of voice-drill need not to be assured that these pages constitute an exceedingly valuable portion of the book.

The Sixth Reader contains selections adapted to the most advanced classes in reading. These will, in the main, prove very satisfactory to teachers. In regard to some of the articles, there may doubtless be a difference of opinion as to their desirableness in a reader; but in most cases the excellence of the selections is undoubted. In this volume we find forty-three pages of introductory instructions in elocution. They are more full and detailed than in the Fifth Reader, and are well worthy of the high reputation of the author and of his twelve years' experience as a public instructor and lecturer. Both volumes are prepared in such attractive style that it is a luxury to handle them. They also surpass many readers in being embellished with cuts of great excellence. We recognize one exquisite one as taken from

* *The Sixth Reader.* By Lewis B. Monroe, Professor of Vocal Culture and Elocution in the Massachusetts Institute of Technology. *The Fifth Reader.* By the same author. Published by Cowperthwait and Co., Philadelphia.

the English editor of Michelet's fairy-like volume "The Bird." No school will regret having procured Monroe's Fifth and Sixth Readers.

FIRST LESSONS IN NATURAL PHILOSOPHY FOR BEGINNERS.*—This little work is entirely in the form of continuous questions, each followed immediately by its answer. It is intended for use either at the fireside, or in the school. It is so composed as to be especially suited to such as may be unable to complete their studies at a High School or Academy, and yet who desire to obtain a fair and practical acquaintance with the more common principles of science. Anything that will in any sensible way assist our young people to an understanding of the science of common life, meets our most hearty approval. The great practical improvement now needed in our public schools is to introduce such practical scientific instruction in the most simple and efficient way.

This simple book, of course, does not claim to take its students very far into science, but it does aim to answer, in as simple and clear a way as possible, the questions that might most naturally arise in matters of daily experience. There is hardly a question asked and answered in the book which can be in any way considered superfluous for a school-child to concern himself with, unless indeed we could be sure that his days were not to extend into manhood. Every one who is to do the work, and meet the responsibilities of a man, ought to learn before the duties of mature life what these elementary books of science teach.

The language of these instructions appears to be very appropriate and sensible; as might be expected, there are some minor points which we consider open to criticism; for instance, we do not think the statement should be made, as it is, that "The earth does remain at the same distance from the sun" in all parts of her course. As the opposite of this is the truth, and the fact produces important consequences, it should hardly stand in its present form. So also the definition of a balloon as a bag made of oiled or varnished silk, limiting its material thus unnecessarily, and for many small balloons incorrectly, leads to careless habits in definition. These and other incidental matters, however, do not essentially affect the value of the book, which can be made very useful to beginners in science.

* *First Lessons in Natural Philosophy for Beginners.* By Joseph C. Martindale, M.D. Published by Eldridge and Brother, Philadelphia.

QUESTIONS FOR WRITTEN EXAMINATIONS.*—This is a book of about two hundred pages, filled with a great variety of questions suitable to be used in the examination of candidates for teachers' certificates, and for the various examinations of ordinary school-work. It appears to be

* *Questions for Written Examinations.* By John Sweet. Published by Ivison, Blakeman, Taylor & Co., New York.

well devised and to contain much pleasing variety. Teachers who are on some occasions desperately driven for want of time, will find much relief in having recourse to this book. Even if they do not desire to use exactly its phraseology or exercises they will find it to suggest useful ideas to their minds: they can use it in this way freely, and yet be quite original in their examinations. It is worth placing in your library for sudden emergencies:

PAMPHLETS RECEIVED.

CIRCULAR OF INFORMATION OF THE BUREAU OF EDUCATION, FOR FEBRUARY, 1872.—This valuable circular of Commissioner Eaton's contains interesting reports on the systems of public institution in Greece, the Argentine Republic, Chili, and Ecuador, with statistics of Portugal and Japan, and an official report on technical education in Italy. We shall probably find an early opportunity to condense some of its more important portions for the benefit of our readers.

Twenty-Fourth Semi-Annual Report of the Superintendent of Public Schools of the City of Boston.

Report of the Board of State School Commissioners of Public Schools in Maryland for 1871.

Annual Report of the Board of St. Louis Public Schools, 1870-1871.

The University of Minnesota Almanac for 1872.

FACETIAE.

Mother Goose's Melodies acquire an additional flavor when rendered into "Pigeon-English." This is the way, according to *Hearth and Home*, in which a Chinese nurse in California sings one of these well-known rhymes to his baby charge:—

Singee songee sick a pence,
Pockee muchee rye;
Dozen two time blackee bird
Cookee in a pie.
When him cut-ee topside
Birdee bobberly sing;
Hinee tinkee nicey dish
Setee force king!
Kingeer in e talkee-room
Countee muchee money;
Queeney in e kitchee
Chew-chew breadee honey,
Servant galoo shakee
Hangee washee clothes;
Chop-chop comes blackee bird,
Nipee off her nose!

During the war, a soldier in the 3d N. H. regiment, who lost his arm at Wagner, was told by the surgeon that he could have a cork arm in its place, that he could even write with. "I am glad of that," he replied, "for I couldn't write with the hand I lost."

A BIT OF BURLESQUE.—In a clever burlesque of the Jenkins style of describing weddings, recently published in the Indianapolis *News*, the bride's dress is described as a white megatherium silk trimmed with prussic acid, blue pompadored front and lambrequins of the same, looped up with calla lilies, flecked by furminated potassite and mellaced trivere—imported expressly for her. Her veil was a biased polonaise, trimmed with double fluted ruchings, surmounted with a wreath of the snowy trichinallis. Among the presents were a set of teeth and an oyster-freezer, from the bride's mother; a gold-lined hash receiver and a set of chased and elegant terra-cotta jewelry from the groom; a quilt pieced by the donor when eleven years of age, and a package of cabbage seed, from the bride's grandmother, aged ninety, who can read fine print without glasses, and who cracked all the nuts for the banquet with her own teeth.

THE NATIONAL EDUCATIONAL ASSOCIATION.

The next meeting of the National Educational Association will be held in Boston, Mass., on August 6, 7, and 8. The forenoon and evening of each day will be occupied by the General Association, and the afternoon of each day by the four departments.

The exercises, a list of which was given in the last number of the *JOURNAL*, will be held in the Lowell Institute Hall and the Hall of the Institute of Technology.

The daily programme will be so arranged as to afford time for the thorough discussion of the topics of the greatest interest and importance, and each discussion will be opened by a person selected for the purpose. All who may be willing to participate in these discussions are requested to come prepared to express well-matured opinions in the fewest possible words.

Considerable difficulty has been experienced in making satisfactory rail road arrangements, but it is expected that at least two of the through lines from the west will agree to sell round-trip tickets at reduced rates. The local committee reports that nine good hotels agree to entertain guests at reduced rates—varying from \$1.50 to \$3.50 a day.

TEACHERS' BULLETIN.

WANTED.—A situation as Principal of a Graded School. The applicant has had several years' successful experience as Principal of a school in one of the cities of Connecticut. Can furnish good testimonials. References, B. G. Northrop, Secretary of State Board of Education, or H. C. Davis, New Haven, Conn., to whom communications can be addressed.

SITUATION WANTED AS TEACHER.—A lady who has had experience in teaching in the Chicago public schools, would like a situation as teacher. Refers to Hon. B. G. Northrop, New Haven, and Charles Northend, New Britain.

PUBLICATIONS OF
CHARLES C. CHAFFIELD & CO.,

Porter. — *THE AMERICAN COLLEGES AND THE AMERICAN PUBLIC.* By Noah Porter, D.D., LL.D., President of Yale College. 12mo, 275 pp., \$1.50.

Barker. — *A TEXT BOOK OF ELEMENTARY CHEMISTRY*, theoretical and inorganic. By George F. Barker, M.D., Professor of Physiological Chemistry in Yale College. 12mo, 350 pp., 102 illust., \$1.75.

Day. — *THE SCIENCE OF AESTHETICS*, or, The Nature, Kinds, Laws and Uses of Beauty. By Prof. H. N. Day, Author of Logic, Art of Discourse, English Literature. 12mo, 440 pp., finely illustrated, price \$2.25.

LOGICAL PRAXIS: comprising a summary of the Principles of Logical Science and copious Extracts for Practical Application. By Prof. H. N. Day. 12mo, 140 pp., cloth, \$1.00.

Woolsey. — *SERVING OUR GENERATION AND GOD'S GUIDANCE IN YOUTH.* Two sermons, by ex-President Woolsey, of Yale College. 12mo, cloth, 75 cents.

Blake. — *MINING MACHINERY*, and various Mechanical Appliances in use, chiefly in the Pacific States and Territories, for Mining, Raising and Working Ores, with Comparative Notices of Foreign Apparatus for similar purposes. By Prof. W. P. Blake. 8vo, 245 pp., \$2.00.

Phelps. — *THE HOLY LAND*, with Glimpses of Europe, and Egypt. By S. D. Phelps, D.D. 12mo, pp., \$1.75.

Elliot. — *SONGS OF YALE*, a collection of the songs of Yale. Edited by Charles S. Elliot, A.M. 12mo, 126 pp., \$1.00.

Jepson. — *ELEMENTARY MUSIC READER*, for use in Public Schools. By B. Jepson, Instructor in vocal music in the Public Schools of New Haven. 8vo, 168pp., 60 cts.

FOUR YEARS AT YALE. By A Graduate of '69. 12mo, 728 pp., \$2.50.

This is a complete and carefully-classified handbook of facts relating to undergraduate life at one of the first colleges in America. It records the experience of every student who completes his four years of study at Yale; it graphically delineates the customs and manners of the students; It gives historical sketches of the societies, exhibitions, periodicals, papers, &c.; it contains each and every bit of information in regard to student life at Yale which one could possibly desire to possess; it in fine reveals to the reader the inside workings of a community which is a world by itself. As life in any American college is but the counterpart of that in any other this book will be found of special interest to every student.

HALF HOURS WITH MODERN SCIENTISTS, comprising lectures and essays by Professors Huxley, Barker, Stirling, Cope and Tyndall. 12mo, 292 pp., \$1.50.

This book contains the first five University Series, printed on heavy paper, and bound up in

handsome style. Over 25,000 copies of these numbers of the University Series have been sold.

University Scientific Series.

I.—**ON THE PHYSICAL BASIS OF LIFE.** By Prof. T. H. Huxley, LL.D., F. R. S. With an introduction by a Professor in Yale College. 12mo, 36 pp., 25 cents.

II.—**THE CORRELATION OF VITAL AND PHYSICAL FORCES.** By Prof. George F. Barker, M.D., of Yale College. A Lecture delivered before the American Institute, N. Y. 36 pp., 25 cents.

III.—**AS REGARDS PROTOPLASM** in relation to Prof. Huxley's Physical Basis of Life. By J. Hutchison Stirling, F. R. C. S. 72 pp., 25 cents.

IV.—**ON THE HYPOTHESIS OF EVOLUTION**, Physical and Metaphysical. By Prof. Edward D. Cope. 12mo, 72 pp., 25 cents.

V.—**SCIENTIFIC ADDRESSES**:—1. *On the Methods and Tendencies of Physical Investigation*. 2. *On Heat and Dust*. 3. *On the Scientific Use of the Imagination*. By Prof. John Tyndall, F. R. S. 12mo, 74 pp., 25 cents.

VI.—**NATURAL SELECTION AS APPLIED TO MAN.** By Alfred Russell Wallace. 12mo, 54 pp., 25 cents.

VII.—**SPECTRUM ANALYSIS**: Three Lectures by Prof. Roscoe, William Huggins, and Norman Lockyer. 12mo, 72 pp., 25 cents.

VIII.—**THE SUN AND ITS DIFFERENT ATMOSPHERES.**—The most recent discoveries and methods of observation. By C. A. Young, Ph. D., of Dartmouth College, one of the most distinguished and successful astronomers of the age. Finely Illustrated.

IX.—**THE EARTH A GREAT MAGNET.**—A profoundly interesting lecture, in which, by means of experiments, apparatus and discoveries of the Author, the subject is logically and forcibly brought before the reader. New illustrations. By Prof. A. M. Mayer, Ph. D., of the Stevens Institute.

MYSTERIES OF THE VOICE AND EAR.—Sound-waves rendered visible; their velocity measured; construction of the vowel-sounds, with other matters which are for the first time treated of before a popular audience. A lecture by Prof. Ogden N. Rood, of Columbia College, New York.

The aim of this series has been to place in a cheap form the advance scientific thought of the age.

It is the intention of the publishers to add to this series other lectures as fast as those of sufficient importance present themselves. On an average, two every three months may be expected. Everything admitted to these series is thoroughly examined by some distinguished Professor at Yale, and will be found, we trust, worthy of the consideration of every thinking person of the age.

Subscriptions are received and the numbers mailed, post-paid, as soon as published, at the following rates: Five successive numbers (in advance), \$1.10; Ten successive numbers (in advance), \$2.00. For sale by all booksellers.

NATURE AND DURATION OF FUTURE PUNISHMENT. By Henry Constable A.M., Prebendary of Cork. Reprinted from the second London edition, with an Introduction by Prof. Charles L. Ives, M.D., of Yale College. 8vo, 68 pp., 40 cents.

VALEDICTORY POEM AND ORATION, Delivered before the Senior Class in Yale College, July 11th, 1871. 32 cents.

458 and 460 CHAPEL STREET,
NEW HAVEN, CONN.

EATON'S MATHEMATICAL SERIES.

JUST PUBLISHED.

AN ELEMENTARY GEOMETRY.

Containing all the essential Propositions and Theorems in less than one hundred pages, with Practical Questions for Review at the close of each book, and Theorems for original demonstrations. Designed for High Schools, Academies and Normal Schools. By W. F. BRADBURY, Master in Cambridge High School, and Author of Eaton's Elementary Algebra, &c. Retail price, \$1.00.

AN ELEMENTARY TRIGONOMETRY.

Containing a Practical and Comprehensive Presentation of Plane Trigonometry, according to the Geometrical and Analytical Methods, together with the necessary Tables. Designed for High Schools, Academies and Normal Schools. By W. F. BRADBURY. Retail price, \$1.00.

ELEMENTARY GEOMETRY AND TRIGONOMETRY.

In 1 vol. Retail price, \$1.50.

Messrs. T. B. & B. also publish

EATON'S ELEMENTARY ALGEBRA,

For High Schools, Academies and Normal Schools. By W. F. BRADBURY, author of Bradbury's Elementary Geometry and Trigonometry, &c., and Master in Cambridge High School. 12mo, 250 pp. Retail Price, \$1.25.

This work is designed for beginners, and yet is sufficiently full for the preparation of Students for College, and for positions as teachers. It contains a large number and a great variety of problems, but does not aim to present all the abstract principles included in works for an advanced collegiate course.

Bradbury's Eaton's Algebra is endorsed by Profs. Powers and Pierce of Harvard University, Prof. Newton of Yale College, Prof. Quimby of Dartmouth, and other College Professors, as containing enough to prepare students for College, and the book has also received the recommendation of some of the most prominent teachers throughout New England.

It has been adopted and is the only Algebra used in the High Schools of Charlestown, Worcester, Lowell, Cambridge, New Bedford, Fitchburg, Milford, West Roxbury, Holyoke, Plymouth, Abingdon, No. Bridgewater, Webster, Danvers, Melrose, Brighton and Needham, Mass., Saco, Me., Dover, Keene, and Peterborough, N. H., Rutland, Brandon, and Windsor, Vt., Pawtucket, R. I., Stamford, Stonington, Groton, Thompsonville, Thomaston, Wallingford, Conn., and numerous other towns as well as Academies, Private Schools and Seminaries throughout New England and the West.

From Mr. CALEB EMERY, Principal of High School, Charlestown, Mass.

We are using Bradbury's Eaton's Algebra with entire satisfaction. Its accuracy, brevity and thoroughness in the statement and illustration of principles render it, in my opinion, a Model Text Book.

From Mr. L. P. MARTIN, Principal of High School, Windsor Locks.

I have tried Eaton's Algebra with excellent success, and can recommend it as much superior to any I have used.

Copies of above works sent for Half-price.

EATON'S SERIES OF ARITHMETICS.

A complete course in Arithmetic for Primary, Grammar, High Schools and Academies. By J. S. EATON, late Instructor in Phillips Academy, Andover, Mass.

This series presents the latest and most improved methods of instruction.

From Prof. I. N. CARLETON, Principal of Conn. State Normal School, New Britain.

I believe most fully in Eaton's Arithmetics.

From Hon. JOHN D. PHILBRICK, Supt. of Public Schools, Boston.

The use of Eaton's Arithmetics in all the grades of our public schools, during the last four years, has only added new proofs of their excellence. The protracted and severe test to which they have been subjected has fully confirmed the opinion of their merits expressed by me previously.

THE TEACHER'S MANUAL.

This work treats of the discipline of the school and the teacher's qualifications and work. It is especially valuable to young teachers. By HIRAM ORCUTT, Principal of Tilden Seminary, West Lebanon, N. H.

Single copies, sent postage paid, on receipt of \$1.00.

Descriptive Catalogue of Eaton's Mathematics and other educational works sent free, on application to the Publishers,

THOMPSON, BIGELOW & BROWN,

[47a]

25 & 29, CORNHILL, BOSTON.

WILSON, HINKLE & CO.'S. LATEST PUBLICATIONS.

Brown's Physiology and Hygiene. By RYLAND T. BROWN, M.D., Chemist-in-Chief in the Department of Agriculture, Washington, D. C. Divided into 50 lessons, with the design to adapt it to the common school term of ten weeks. 12mo, cloth, 288 pages. Illustrated. Price, \$1.50.

Henkle's Text Spelling-Book. By Hon. W. D. HENKLE, late State School Commissioner of Ohio. Over five thousand difficult words arranged in short lessons, including many proper names; also, a number of Dictation Exercises. For advanced classes, 144 pp. Price, 40 cents.

Eclectic Primary Copy-Book. To accompany the ECLECTIC SYSTEM OF PENMANSHIP. Designed to be written with lead pencil, during second year of school-life. The letters, and figures are of large size, given separately and in combination. The object being to teach the form of the letters. Handsomely Illustrated Cover. Price, 12 cents.

Venable's United States History. For Schools. By W. H. VENABLE. 12mo, 280 pp. Finely Illustrated and accompanied with numerous carefully drawn maps and charts. Contains VALUABLE FOOT NOTES, referring to literary matter relating to subjects discussed in the text: an original system of GENERAL QUESTIONS; an original system of BIOGRAPHICAL REVIEWS, illustrated with authentic portraits: and sustains throughout a unity of design and execution, presenting a complete though concise, artistic and pleasing narration of the leading facts of the history of our country in an attractive form. Price, \$1.25.

Thalheimer's Ancient History. A Manual of Ancient History, from the earliest times to the fall of the Western Empire. By M. E. THALHEIMER, formerly Teacher of History and Composition in Packer Collegiate Institute. 8vo, 378 pp. Handsomely illustrated with full-page engravings of Ancient Temples and other historical objects, charts of the principal cities, and accurate and finely executed double-page maps of the various countries considered in the text. Price, \$2.50.

The Farser's Manual. By JOHN WILLIAMS, A.M. Embracing classified examples in nearly every variety of English construction. 12mo, cloth, 266 pp. A very valuable hand-book of parsing exercises: can be used as a companion to any English Grammar. Price, \$1.00.

Finneo's Guide to Composition. (New edition in cloth binding.) By T. S. PINNEO, A.M., M.D., author of "Primary Grammar," "Analytical Grammar," etc., etc. Embracing over 250 carefully graded lessons, commencing with the simplest sentences, and instructing in all the essentials to a forcible, easy style; also, full instruction on the use of capital letters, punctuation marks, &c. Price, 75 cents.

McGuffey's Juvenile Eclectic Speaker. (New and improved edition.) Two hundred easy and animated exercises for reading or speaking. New, fresh, humorous and instructive, grave and gay. Price, 75 cents.

Supplies for first Introduction, and Sample Copies to Teachers, at two-thirds retail prices. Address the Publishers for full descriptive Circulars.

ECLECTIC PENS.

No. 100, SCHOOL PEN. No. 200, COMMERCIAL PEN.

No. 300, EXTRA FINE PEN.

Price, \$1.25 per Gross. Sample Card, 3 pens of each kind, 10 cents.

The following will be sent gratis to Teachers and School Officers: Illustrated Descriptive Catalogue of the Eclectic Educational Series.

Specimen pages of the Eclectic Geographies.

Specimen pages of Phillips' Day-School Singer.

Specimen pages of Venable's U. S. History.

Specimen pages of Leigh's Phonetic Readers.

WILSON, HINKLE & CO., Publishers,

137 WALNUT STREET,

28 BOND STREET,

CINCINNATI.

NEW YORK.

THE CONNECTICUT SCHOOL JOURNAL.

SANFORD-MAWKS MERIDEN

PUBLISHED UNDER THE DIRECTION OF THE
STATE TEACHERS' ASSOCIATION,
By CHARLES C. CHATFIELD & Co., 460 Chapel Street, opposite Yale College, New Haven, Ct.

MANAGING EDITORS:

I. N. CARLETON, New Britain. W. B. DWIGHT, New Britain.

BOARD OF EDITORS:

D. P. CORBIN, Hartford.	B. G. NORTHROP, New Haven.
H. C. DAVIS, New Haven.	A. PARISH, New Haven.
J. D. FERGUSON, Stamford.	M. PITMAN, Durham.
A. G. FINNEY, Portland.	H. E. SAWYER, Middletown.
S. B. FROST, Danielsonville.	R. SPAULDING, Rockville.
A. MORSE, Hartford.	N. H. WHITTEMORE, Norwich.

Address all business letters to the publishers, New Haven, Conn.; all editorial letters to the editors at New Britain.

CONNECTICUT STATE NORMAL SCHOOL, NEW BRITAIN, CONN.

This institution is now in successful operation, with a large number of pupils. Thorough instruction is here given, FIRST, in the branches of the study required to be taught in the public schools, and, SECOND, in the best methods of teaching those branches.

Applicants for admission must be at least sixteen years of age, must declare their full intention of teaching in the public schools of Connecticut, and must pass a satisfactory examination in Reading, Spelling, Writing, Arithmetic, Geography, and English Grammar.

Examination for admission is held on MONDAY, the first day of each term, at 2 o'clock, P.M.

The next school year opens August 26th, 1872.

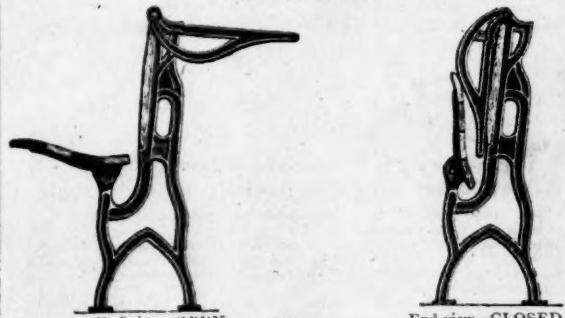
For catalogue, address, at New Britain,

I. N. CARLETON, Principal.

[46c]

NATIONAL SCHOOL FURNITURE CO., 111 and 113 William St., New York,

MANUFACTURERS OF



End view—OPEN.

End view—CLOSED.

PEARD'S PATENT FOLDING DESK and SETTEE.

This Desk was awarded the prizes over all competitors at the fairs of the American Institute for 1870 and 1871.

When the desk-lid is folded over, it rests against the back of the seat in front, forming an equally comfortable false back. The book-rack is always accessible. The seat hinge is the latest patent, February, 1872, and the last in use. It is the strongest made, and perfectly noiseless.

Over 20,000 of these Desks have been sold since their first manufacture, July, 1861.

We also manufacture the "GEM" and "ECONOMIC" DESKS, with stationary top and folding seat; the "NATIONAL STUDY DESK" with Easel attachment for High Schools and Academies, and a full line of School, Church and Hall Settees, Black Boards, &c.

The same noiseless Hinge Joint is used on all our folding Desks and Seats.

Send for an Illustrated Catalogue. Address,

THE NATIONAL SCHOOL FURNITURE CO.,

Or 111 and 113 William St., New York.

E. G. FINNEY, Portland, Conn.

[72c]

Pronounced by GENERAL EATON, Commissioner of Education at Washington, to be the best system in the United States.
"Children not taught like parrots to sing by rote, but taught to READ music and sing it AT SIGHT."

JEPSON'S MUSIC READERS FOR PUBLIC SCHOOLS.

SIMPLE. PROGRESSIVE. TESTED FOR TEN YEARS.

The result of actual experience in the schoolroom.

Every teacher who has ever desired to instruct children in the elements of music has felt the need of a book that was simple, clear and progressive in its character—one that could be used successfully even if the teacher was scarcely proficient in the first rudiments of the science. Such is the Music Reader by Prof. Benjamin Jepson. As to the value of the system no higher commendation can be given than that awarded by Gen. Eaton, who, after visiting the schools of the United States, gave his unqualified endorsement of this system as the best he had seen.

THE TESTIMONY OF PROF. HUNTINGTON IN REGARD TO JEPSON'S MUSIC READER.

During a period of twenty-five years in which I have been engaged in teaching, much of the time in schools and seminaries, I have been unable to find text-book or music manual which would not either confuse the pupils by introducing a multiplicity of ideas in the same exercise or promote *rote singing* by limiting the demonstration of each principle to a single exercise, until I found the system adopted in Prof. Jepson's book, which, in my opinion, must be the one universally accepted and fostered by the public schools of our land. The intrinsic value and merit of the book has been fully demonstrated in the schools of New Haven, where it has been used for the past six years by its author, and in those of Hartford and its vicinity by Prof. R. S. True. One very important feature of the work is that it can be readily understood by subordinate teachers even though not altogether familiar with the science; and with the same preparation for each recitation which is made in every other science, music may be as effectually taught, which is shown in all the public schools where it has been adopted.

Prof. Jepson is worthy of high esteem, not only as a thorough musician, but as a philanthropist, placing in the hands of the children and adults of our country a book which will enable them to successfully cope with the musical progress of the age.

C. W. HUNTINGTON, Hartford, Conn.

The following is the testimony from the principals of Middletown, where the system has been tested thoroughly:

I am familiar with Mr. B. Jepson's method of instruction in singing as laid down in his "Elementary Music Reader," and as exemplified in his own practice. The "Reader," both in the earlier and later editions, has been used in our schools, and I am convinced that if the course there indicated be followed with tolerable energy and perseverance, the results will demonstrate the great value of the system and of the book.

H. E. SAWYER, Superintendent of Schools, Middletown, Ct.

I have been using "Jepson's Elementary Music Reader" for some months and am desirous of expressing my ever increasing satisfaction with it as a text book. Having been written by a gentleman who has had a large experience in this hitherto neglected but very important branch of education, it exactly meets the want felt in all schools, public or private, where music as a study is being introduced. The explanations are so simple, and the exercises so easy, progressive and attractive that the book commends itself to all who use it—and teachers with only a moderate knowledge of music will be able, by its use, to teach thoroughly and practically.

A. L. CURTISS, Teacher of Vocal Music, South District Schools, Hartford, Conn. I have tested Prof. Jepson's "Music Reader" in the various grades of our school, and find them most admirably adapted to their purpose.

D. P. CORBIN, Principal Asylum Hill Grammar School, Hartford, Conn.

Every exercise which is undertaken in the school-room should be executed honestly and thoroughly. I have always regarded the "Elementary Vocal Drill" as the exercises of all others the most reluctant to conform to this rule. In overcoming the difficulties of the exercise, I have received more help from Mr. Jepson's system of elementary vocal drill than from any other.

JOSEPH GILE, Principal of Eaton School, New Haven.

TESTIMONY OF HON. BIRDSEY G. NORTHROP, SECRETARY OF THE STATE BOARD OF EDUCATION OF CONNECTICUT.

Mr. Benj. Jepson, the instructor of Vocal Music in the public schools of New Haven, has shown great tact and skill in teaching singing by note to even the youngest pupils in the schools of the city. His system has been long and thoroughly tested in New Haven, where it is now working admirably. Gen. Eaton, National Commissioner of Education, and Gov. English, when visiting the schools of this city, expressed their surprise and gratification at hearing children in the primary schools sing *at sight* various exercises marked at the time on the blackboard. I should be glad to find the system which has here been so successful, generally adopted. Certainly, music should be taught in all our schools.

B. G. NORTHRUP, *

Secretary State Board of Education.

FROM PROF. HIBBARD, THE ELOCUTIONIST.

Prof. Jepson's method of teaching singing, as arranged in his "Elementary Music Reader," is of a very superior order, and in our schools will do everything that can be reasonably expected of a work of the kind.

RALPH G. HIBBARD, Professor of Elocution.

of the public schools of New Haven, Hartford and Mid-

Prof. Jepson's Music Reader is, in my opinion, the most systematic and best adapted to school use, of any work of its kind now before the public. I have entertained a high opinion respecting its merits, since first seeing it in manuscript, an opinion which its use in the school-room for several years has greatly strengthened. Prof. Jepson is deserving of the praise which his highly meritorious work receives, and we cheerfully add our testimony to the above.

RALPH H. PARK, Principal of Wooster School, New Haven.

"Jepson's Music Reader" has been used in the daily practice of vocal music in his school since its organization. The results have been, not only satisfactory, but wonderful. The system is such that children reading in the Primer or First Reader can learn to sing the scale, first by numeral, then by syllable, then simple melodies in different keys, and so on through the elements of music. The children in the Grammar Department are able to sing new music at sight in four parts. The time spent in the daily practice is from fifteen to twenty minutes.

H. C. DAVIS, Principal Skinner School, New Haven.

It gives me much pleasure to testify of the success attending the study of vocal music in our school under the superior management of Prof. Jepson. Mr. J. is thoroughly qualified for his work, and enters into it with a zeal that is highly commendable. Not being satisfied, however, with what he has already done, he has conceived the idea of revising his "Elementary Music Reader," making a complete and easy gradation of exercises adapted to the wants of the younger as well as the older pupils. Mr. Jepson has already established an enviable reputation in New Haven as a teacher of vocal music, and his revised work, so admirably adapted to school use, will no doubt meet with a large sale.

GEO. R. BURTON, Prin. Wash. School, New Haven.

CHARLES C. CHATFIELD & Co., Publishers,

458 & 460 CHAPEL STREET,

NEW HAVEN, CONN.

OPPOSITE YALE COLLEGE,

The Connecticut School Journal.

i

CONTENTS OF NO. 8, VOL. II.

	PAGE.
WINCHESTER SCHOOL AND ITS FOUNDER. By Miss A. B. Berard, West Point, N. Y.	217
PUBLIC INSTRUCTION IN MORAL SCIENCE. By B. F. Harrison, M. D., Wallingford, Conn.	220
TEACHER OUT OF SCHOOL. Randall Spaulding.	223
THE NEW SCHOOL CODE OF CONNECTICUT. By Rev. J. G. Baird,	226
CONNECTICUT SCHOOL STATISTICS AGAIN. By Rev. J. G. Baird,	229
OF THE STUDY OF LATIN AND GREEK IN OUR HIGH SCHOOLS. By S. B. Frost, Danielsonville.	233
TEACHERS' EXAMINATIONS. By Crusee,	236
MISCELLANY: Technical Education in Europe; A Great Speech at the Exeter Academy Celebration; The Cost of Yachts; The Golden Rule.	237
EDITORIAL. ANNALS OF EDUCATION: The Normal School Anniversary; Durham; New Haven; Suffield.	240
BOOK NOTICES: Common School Grammar; Arithmetical Problems; Science Primer; McGuffey's New Juvenile Speaker; A Faithful Ministry; A Test Spelling Book; The Child; Colton's Common School Geography.	243
PERIODICALS:	245

THE CONNECTICUT SCHOOL JOURNAL is published once a month. Subscription price, \$1.50 per year, in advance. Single copies, 15 cents. All letters except those in regard to matter to be published in the JOURNAL to be addressed to the publishers, CHARLES C. CHATFIELD & CO., New Haven, Conn. All contributions of every kind must pass under the notice of the editors, and should therefore be addressed to "Editors of CONNECTICUT SCHOOL JOURNAL, New Britain, Conn." Be careful to make this distinction: The editors reside in New Britain; the JOURNAL is printed and published in New Haven.

M. E. THURSTON & CO.,
MANUFACTURERS OF
SUPERIOR SCHOOL FURNITURE,
DESKS AND SETTEES,
7 and 9 FULTON STREET, PROVIDENCE, R. I.



Also, Owners of the
ELASTIC SLATING,

Which is warranted equal, if not superior, to either the Boston or New York boards, in smoothness, color, durability, reflection of light, and, in fact, in all that can be claimed for a first-class Black-Board.

Best quality of SCHOOL SUPPLIES constantly on hand.

E. M. THURSTON & CO.,
7 and 9 Fulton Street, Providence, R. I.

TOWNSEND SAVINGS BANK,
CORNER OF CHAPEL AND ORANGE STREETS.

Deposits made in this Bank commence Interest on the Day of Deposit,—which interest is added to principal and Compounds in February and August of each year, all of which is free of all taxes.

Bank open from 9 A. M. to 3 P. M.

JAMES M. TOWNSEND, President.
LEVI IVES, M.D., Vice President.
EDWARD H. TOWNSEND, Sec'y.

[65a]

	PAGE.
Scribner's Monthly, FACETIE,	243
	245

INDEX TO ADVERTISEMENTS.

Connecticut State Normal School,	(Cover) 1
National School Furniture Co.,	1
Jepson's Music Reader,	2
Copirthwait & Co.,	3
Thompson, Bigelow & Brown,	4
Wilson, Hinckle & Co.,	4
E. M. Thurston & Co.,	1
Townsend Savings Bank,	1
Ward's Ink,	2
E. J. Piper,	2
A. S. Barnes & Co.,	2
Brewer & Tilestone,	2
Robert S. Davis & Co.,	2
Sheldon & Co.,	3
E. H. Butler & Co.,	3
G. & C. Merriman & Co.,	4
Charles C. Chatfield,	4

SCHOOL FURNITURE.

Send for

ILLUSTRATED CATALOGUE

TO

E. J. PIPER, Manufacturer,

[48a]

Springfield, Mass.

USE
WARD'S INK

SAMUEL WARD & CO.,

PROPRIETORS, BOSTON, MASS.

CHARLES C. CHATFIELD & CO.,

GENERAL DEALERS,

COLLEGE BOOK STORE,

[67f]

NEW HAVEN, CONN.

To Teachers about to Purchase Books, either New or Second-Hand.—We beg to announce to the teachers of Connecticut that we keep a full stock of new and also second-hand School Books, as well as all kinds of new and second-hand Miscellaneous Books, which we sell at extremely low prices. Customers served as well by mail as though a visit was made in person. A full stock of teachers' supplies always on hand. Special discount to teachers.

CHARLES C. CHATFIELD & CO.,

Nos. 458 and 460 Chapel Street,

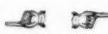
(Opposite Yale College),

New Haven, Conn.

ANOTHER "BRIEF BOOK."

The Great Publication of the Year.

ONE IN MANY.



MANY IN ONE.

MONTETH'S
Comprehensive Geography

Not an old book re-vamped. Not an addition to any "Series," but

A BOOK BY ITSELF,

COMPLETE, INDEPENDENT, "COMPREHENSIVE,"

YET SIMPLE, BRIEF AND POPULAR.

A SERIES IN ONE VOLUME,

Adequate for the entire Common School Course.

The student of MONTETH'S COMPREHENSIVE GEOGRAPHY learns all about one country at a time, viz.: its Civil, Physical, Descriptive, with

TOPICAL, COMPARATIVE AND HISTORICAL GEOGRAPHY,

And MAP DRAWING, by Allen's Unit-of-Measurement System.

BIRD'S-EYE VIEWS OF THE WORLD

are presented by the new RELIEF MAPS, or photographic pictures of the earth's surface, prepared at great expense, to illustrate Physical Geography. SEGMENT MAPS (also original) enable scholars to make their own globes. The POLITICAL MAPS are colored to represent states as objects; not overcrowded with names of secondary importance; with marginal device to show comparative sizes and latitudes. Also, separate maps to show comparative areas by a common measure. Separate Maps of each European Country for reference. The ILLUSTRATIONS are finely executed and of the most practical character, following out the prominent idea of

OBJECT TEACHING.

ANCIENT GEOGRAPHY. A section on the Old World as illustrated by the Scriptures and the Classics is a notable feature of MONTETH'S COMPREHENSIVE GEOGRAPHY.

SAMPLE COPY, unbound, for examination, 50 cents. SPECIMEN PAGES, free.

A. S. BARNES & CO.,

111 & 113 WILLIAM ST.,
NEW YORK.

[76b]

515 STATE STREET
CHICAGO.

**WORCESTER'S
Quarto Dictionary.**

THE STANDARD.

The Largest, The Cheapest, The Best.

ILLUSTRATED.

A massive volume of 1854 pages, and contains considerably more than

ONE HUNDRED THOUSAND WORDS

in its vocabulary, with their pronunciation, definition and etymology.

RECOMMENDATIONS.

"The Senate need only go to a simple Dictionary; I will not go to a law book or any work on the law of Nations, but I take what I think is the

BEST AUTHORITY,

Worcester's Large Dictionary."

Hon. CHARLES SUMNER,

in U. S. Senate, Feb. 21st, 1872.

"We concur with Senator Sumner in preferring the HONEST, SCHOLARLY and TRUSTWORTHY WORCESTER'S Dictionary."

New York World, Feb. 23, 1872.

"An almost indispensable aid to a correct delivery of our thoughts, whether in writing or speaking."

Prof. JOSEPH HENRY,

Secretary of the Smithsonian Institution.

April 13th, 1872.

"Worcester's Dictionary has constantly lain on my table for daily use, and Webster's reposed on my shelves for occasional consultation."

OLIVER WENDELL HOLMES.

"It should be placed on the centre-table for daily consultation and study in every family."—*New York Independent*, Jan. 1872.

From the *Concord (N. H.) Monitor*, May 23d, 1872.

"The Scholarship of the country is on the side of Worcester. Against the learning and culture represented by such names as Geo. C. Marsh, Horace Mann, Robert C. Winthrop, Oliver W. Holmes, John Todd, S. Austin Allibone, O. A. Brownson, Geo. S. Hillard, Edward Everett, Wm. C. Bryant, C. C. Felton, Charles Sumner and scores of others that might be repeated, Webster has little to show except the testimony of booksellers."

We have just issued, with important additions,

*New and Illustrated Editions of
WORCESTER'S PRIMARY AND COMPREHENSIVE DICTIONARIES.*

SPECIAL TERMS will be made to Committees and Teachers who desire to see their scholars generally supplied with a good Dictionary. Correspondence is Solicited.

For Sale by Booksellers Generally.

BREWER & TILESTON,

17 Milk St., Boston.